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John Gregory M.D.

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LECTURES

ON THE

DUTIES AND QUALIFICATIONS

OF A

PHYSICIAN,

By JOHN GREGORY, M. D. F. R. S.

LATE PROFESSOR OF MEDICINE IN THE UNIVERSITY OF EDINBURGH,
AND FIRST PHYSICIAN TO HIS MAJESTY IN SCOTLAND.

REVISED AND CORRECTED

By JAMES GREGORY, M. D.

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TO

SIR JOHN PRINGLE, BARONET,

PHYSICIAN TO HER MAJESTY.

SIR,

WITH great pleasure I embrace this opportunity of giving you a public testimony of my sincere attachment. There is, besides, a peculiar propriety in addressing to you the following LECTURES, intended for the use of the young students in physic, as it affords me a very proper occasion of pointing out to their imitation, a Gentleman, whose honour and probity, whose genius and learning, have done so much credit to the profession, and whose ardent zeal and unwearied labours have so much contributed to its advancement.

I am, with the sincerest respect and esteem,

SIR,

Your obliged and

Faithful Servant,

JOHN GREGORY.

COLLEGE OF EDINBURGH,
May 19, 1772.

ADVERTISEMENT,

Prefixed to the Second Edition of this Work.

THE following Lectures have been read in the University of Edinburgh for several years past; and as many transcripts of them were, from time to time, taken by my pupils, one of them found its way to the press in the negligent dress, in which they were first exhibited. The Public, however, having been pleased to afford them a favourable reception even in that form, I thought it a piece of justice I owed to its candour, to give them a thorough revisal, and to make them, as far as I was able, more worthy of its acceptance. This I have now done. I hope they will be found of some use, not only to students, but to the younger part of the Faculty; and that my sincere endeavours to promote the true interests of Physic, however ineffectual, will induce my brethren to overlook any defects, that, after all my care, may still be found in them.

LECTURE I.

UTILITY and dignity of the medical art.—Reasons why physicians have been sometimes exposed to ridicule.—Requisites to form the character of a physician.—Opportunities which the profession of medicine gives for the exertion of genius, and for the exercise of humanity.—Inquiry into the duties and offices of a physician.—Division of the subject.—The genius, understanding, and temper required in a physician.—Difficulties attending the profession.—Command of temper, presence of mind, and resolution, necessary.—Moral qualities.—Humanity.—Gentleness of manners.—Flexibility.—Particular tenderness due to nervous patients.—Frequent contrast between the manners of a physician when first setting out, and when established in practice.—Obligations to discretion, secrecy, and honour.—Temperance, sobriety.—Candour.—Openness to conviction.

LECTURE I.

THE design of the profeſſion which I have the honour to hold in this Univerſity, is to explain the *practice* of *medicine*, by which I underſtand, the art of preſerving health, of prolonging life, and of curing diſeaſes. This is an art of great extent and importance; and for this all your former medical ſtudies were intended to qualify you.

But, before I enter upon the particular buſineſs of this courſe, I ſhall, agreeably to cuſtom, give ſome preliminary lectures, in which I ſhall lay before you some considerations, which, though not strictly belonging to my subject, yet deserve the attention of all those who would practise medicine.—On this occasion, I think it needless to dwell on the utility and dignity of the medical art. Its utility was never seriously called in question; every man who suffers pain or sickness will very gratefully acknowledge the usefulness of an art which gives him relief. People may dispute, whether physic, on the whole, does more good or harm to mankind; just as they may dispute, whether the faculty of reason, considering how it is often perverted, really contributes to make human life more or less happy; whether a vigorous constitution and an independent fortune are blessings or curses to those who possess them; whether the arts and sciences in general have proved beneficial or detrimental to mankind.—Such questions afford opportunities for the display of eloquence, and for saying plausible and ingenious things; but still nobody doubts of the real and substantial advantages attending those acquisitions, if applied to their natural and proper uses. Much wit has indeed, in all ages, been exerted upon our profession; but, after all, we shall find that this ridicule has rather been employed against physicians than physic. There are some reasons for this sufficiently obvious. Physicians, conſidered as a body of men who live by medicine as a profession, have an interest separate and distinct from the honour of the science. In pursuit of this interest, some have acted with candour, with honour, with the ingenuous and liberal manners of gentlemen. Conscious of their own worth, they disdained every artifice, and depended for success on their real merit. But such men are not the most numerous in any profession. Some impelled by necessity, some stimulated by vanity, and others anxious to conceal ignorance, have had recourse to various mean and unworthy arts to raise their importance among the ignorant, who are always the most numerous part of mankind. Some of these arts have been an affectation of mystery in all their writings and conversations relating to their profession; an affectation of knowledge, inscrutable to all, except the adepts in the science; an air of perfect confidence in their own skill and abilities; and a demeanor solemn, contemptuous, and highly expressive of self-sufficiency. These arts, however well they might succeed with the rest of mankind, could not escape the censure of the more judicious, nor elude the ridicule of men of wit and humour, The stage, in particular, has used freedom with the professors of the salutary art; but it is evident, that most of the satire is levelled against the particular notions, or manners of individuals, and not against the science itself.

Of the dignity of the profession I need say little. I suppose you are well satisfied that you have chosen a reputable one. Whatever may have been the pride or caprices of a few countries, it has generally been looked upon, and with good reason, as one of the most liberal. To excel in it requires a greater compass of learning than is necessary in any other. A knowledge of mathematics, at least of the elementary parts of them, of natural history and natural philosophy, are essentially connected with it; as well as the sciences of anatomy, botany, and chemistry, which are indeed its very foundations. There are likewise some parts of knowledge, which though not absolutely necessary to the successful practice of medicine, are yet so useful, that no physician, who has had a regular education, is found without them; such are, an acquaintance with the Latin, Greek, and French languages. If you add to this, that knowledge of men, and of manners which a physician naturally and insensibly acquires by an extensive intercourse with mankind, I think it will evidently appear, that no profession requires a greater variety of liberal accomplishments than that of physic. This sufficiently establishes its dignity: I say, its dignity, if that is to be estimated by its real usefulness to mankind, and by the variety of talents necessary to practise it with success and reputation.

We have indeed much reason to be pleased with the honourable point of view in which our profession is regarded in every part of the British dominions. They who have seen in how contemptible a light some of its branches are considered in other countries of Europe, will feel more sensibly the just regard paid to them here. One happy consequence, among many others, which results from this, is, that gentlemen of the best families, distinguished for their spirit and their genius, often apply to the study of medicine; and the liberal and ingenuous manners, generally found in men well born and genteelly educated, reflect an additional dignity on the profession.

Besides the general consideration of the utility and dignity of the science of medicine, it may be considered in two different views.

In the first place, as presenting a very ample field for the exertion of genius.—The great extent of the subject, and a variety of causes, which I shall afterwards endeavour to explain, have left it imperfect in many of its parts; and indeed there are some in it hitherto unexplored.

In the second place, medicine presents a no less extensive field for the exercise of humanity. A physician has numberless opportunities of giving that relief to distress, which is not to be purchased with the wealth of India. This, to a benevolent mind, must be one of the greatest pleasures. But, besides the good which a physician has it often in his power to do, in consequence of skill in his profession, there are many occasions that call for his assistance as a man; as a man who feels for the misfortunes of his fellow creatures. In this respect he has many opportunities of displaying patience, good-nature, generosity, compassion, and all the gentler virtues that do honour to human nature. The Faculty has often been reproached with hardness of heart, occasioned, as is supposed, by their being so much conversant with human misery. I hope and believe the charge is unjust; for habit may beget a command of temper, and a seeming composure which is often mistaken for absolute insensibility. But, by the way, I must observe, that, when this insensibility is real, it is a misfortune to a physician, as it deprives him of one of the most natural and powerful incitements to exert himself for the relief of his patient. On the other hand, a physician of too much sensibility may be rendered incapable of doing his duty, from anxiety, and excess of sympathy; which cloud his understanding, depress his spirit, and prevent him from acting with that steadiness and vigour, upon which perhaps the life of his patient in a great measure depends.

This naturally leads me to make some observations on the duties and office of a physician; a subject of great importance, but perhaps of so delicate a nature as makes it difficult for one of the profession to treat of it with proper freedom. I shall, however, attempt to do it, without any reserve. The difficulty of treating this subject, in such a manner as to give no offence, arises from hence, that medicine may be considered either as an art the most beneficial and important to mankind, or as a trade by which a considerable body of men gain their subsistence. These two views, though distinct, are far from being incompatible, though in fact they are often made so. I shall endeavour to set this matter in such a light as may shew that the system of conduct in a physician, which tends most to the advancement of his art, is such as will most effectually maintain the true dignity and honour of the profession, and even promote the private interest of such of its members as are men of real capacity and merit. I am under less apprehension of discussing this subject before gentlemen at your time of life, than if you were further advanced in years. Youth indeed is the season when every sentiment of liberty, of generosity, and of candour, most easily find their way to the heart. If they do not reach it then, they never will afterwards. Age may improve the understanding by accessions of knowledge and experience; whilst at the same time that warmth of temper and imagination, which so often mislead the judgment, gradually abate. But it unfortunately happens, that this very circumstance attending the decline of life, which in some respects improves the understanding, in others throws a damp upon genius, checks the ardent pursuit of science and truth, and shuts the heart against every manly, enlarged, and generous sentiment.

In the prosecution of this subject, I shall, in the first place, consider what kind of genius, understanding, and temper naturally fit a man for being a physician.—In the second place, what are the moral qualities to be expected from him in the exercise of his profession, viz. the obligation to humanity, patience, attention, discretion, secrecy, and honour, which he lies under to his patients.—In the third place, I shall take notice of the decorums and attentions peculiarly incumbent on him as a physician, and which tend most effectually to support the dignity of the profession; as likewise the general propriety of his manners, his behaviour to his patients, to his brethren, to surgeons, and to apothecaries.—In the fourth place, I shall particularly describe that course of education which is necessary for qualifying a physician to practise with success and reputation; and shall, at the same time, mention those ornamental qualifications expected from the physician as a gentleman of a liberal education, and without which it is difficult to support the honour and rank of the profession.

I begin with an inquiry into the genius, understanding, and temper, which naturally fit a man for being a physician.

Perhaps no profession requires so comprehensive a mind as medicine. In the other learned professions, considered as sciences, there is a certain established standard, certain fixed laws and statutes, to which every question must constantly refer, and by which it must be determined. A knowledge of this established authority may be attained by assiduous application and a good memory. There is little room left for the display of genius, where invention cannot add, nor judgment improve; because the established laws, whether right or wrong, must be submitted to. The only exercise for ingenuity, is in cases where it does not clearly appear what the laws are. But even then, as disputable points must be referred to the determination of judges, whose opinions, being formed from various circumstantial combinations, frequently differ, there is no criterion by which the ingenious reasoner can be judged; and his conclusions, whether well or ill drawn, must still remain undecided. The case is very different in medicine. There we have no established authority to which we can refer in doubtful cases. Every physician must rest on his own judgment, which appeals for its rectitude to nature and experience alone. Among the infinite variety of facts and theories with which his memory has been filled in the course of a liberal education, it is his business to make a judicious separation between those founded in nature and experience, and those which owe their birth to ignorance, fraud, or the capricious systems of a heated and deluded imagination. He will likewise find it necessary to distinguish between important facts, and such as, though they may be founded in truth, are notwithstanding trivial or utterly useless to the main ends of his profession. Supposing all these difficulties surmounted, he will find it no easy matter to apply his knowledge to practice. In teaching a system of the practice of physic, every disease must be considered separately, and as existing by itself; but in fact diseases are found complicated in endless varieties, which no system has hitherto been able to comprehend. This occasions an embarassment to a young practitioner, which nothing can remove but a habit of nice discernment, a quickness of apprehension which enables him to perceive real analogies, and, what is rarely united with this, a solidity of judgment, which secures him from being deceived by imaginary ones. A student of much fancy and some learning has no idea of this difficulty. In the pride of his heart, he fancies every disease must fly before him; he thinks he not only knows the proximate causes and indications of cure in all distempers, but a variety of remedies that will exactly answer them. It will be unfortunate, however, for his patients, if a little experience does not humble this pride, and satisfy him that in many cases he neither knows the proximate causes nor the indications of cure, nor how to fulfil these indications when he does know them; or shew him, what is equally humiliating, that the indications are different and contradictory. In this situation, his boasted science must stoop, perhaps, for some time, to be an idle spectator, or to palliate the violence of particular symptoms, or to proceed with the utmost fear and diffidence, with such lights as he can receive from a precarious analogy. Such are the difficulties which a physician has to encounter in his early practice; to conquer which is required, besides the qualifications of a proper education, the concurrence of a penetrating genius, and of a clear solid judgment; and, in many cases, of a quickness of apprehension, instantaneously to perceive where the greatest probability of success lies, and of resolution to act accordingly.

But, although a physician should possess that enlarged medical genius, which I have just now described, yet talents of another kind are also requisite. A physician has not only for an object, the improvement of his own mind, but he must study the temper, and struggle with the prejudices of his patient, of his relations, and of the world in general; nay, he must guard himself against the ill offices of those, whose interest interferes with his; and it unfortunately happens, that the only judges of his medical merit are those who have sinister views in concealing or depreciating it. Hence appears the necessity of a physician's having a large share of good sense, and knowledge of the world, as well as a medical genius and learning.

Such are the genius and talents required in a physician; but a certain command of the temper and passions, either natural or acquired, must be added, in order to give them their full advantage. Sudden emergencies occur in practice, and diseases often take unexpected turns, which are apt to flutter the spirits of a man of lively parts and of a warm temper.

Accidents of this kind may affect his judgment in such a manner as to unfit him for discerning what is proper to be done; or if he does perceive it, may nevertheless render him irresolute. Yet such occasions call for the quickest discernment and the steadiest and most resolute conduct; and the more, as the sick so readily take the alarm, when they discover any diffidence in their physician. The weaknesses too and bad behaviour of patients, and a number of little difficulties and contradictions which every physician must encounter in his practice, are apt to ruffle his temper, and consequently to cloud his judgment, and make him forget propriety and decency of behaviour. Hence appears the advantage of a physician's possessing presence of mind, composure, steadiness, and an appearance of resolution, even in cases, where, in his own judgment, he is fully sensible of the difficulty.

I come now to mention the moral qualities peculiarly required in the character of a physician. The chief of these is humanity; that sensibility of heart which makes us feel for the distresses of our fellow creatures, and which of consequence incites us in the most powerful manner to relieve them. Sympathy produces an anxious attention to a thousand little circumstances that may tend to relieve the patient; an attention which money can never purchase: hence the inexpressible comfort of having a friend for a physician. Sympathy naturally engages the affection and confidence of a patient, which in many cases is of the utmost consequence to his recovery. If the physician possesses gentleness of manners, and a compassionate heart, and what Shakespeare so emphatically calls "the milk of human kindness," the patient feels his approach like that of a guardian angel ministering to his relief; while every visit of a physician who is unfeeling, and rough in his manners, makes his heart sink within him, as at the presence of one who comes to pronounce his doom. Men of the most compassionate tempers, by being daily conversant with scenes of distress, acquire, in process of time, that composure and firmness of mind so necessary in the practice of physic. They can feel whatever is amiable in pity, without suffering it to enervate or unman them. Such physicians as are callous to sentiments of humanity, treat this sympathy with ridicule, and represent it either as hypocrisy, or as the indication of a feeble mind. That sympathy is often affected, I am afraid is true; but this affectation may be easily seen through. Real sympathy is never ostentatious; on the contrary, it rather strives to conceal itself. But what most effectually detects this hypocrisy is a physician's different manner of behaving to people in high and people in low life; to those who reward him handsomely, aud those who have not the means to do it. A generous and elevated mind is even more shy in expressing sympathy with those of high rank, than with those in humbler life; being jealous of the unworthy construction so usually annexed to it.—The insinuation that a compassionate and feeling heart is commonly accompanied with a weak understanding and a feeble mind is malignant and false. Experience demonstrates, that a gentle and humane temper, far from being inconsistent with vigour of mind, is its usual attendant; and that rough and blustering manners generally accompany a weak understanding and a mean soul, and are indeed frequently affected by men void of magnanimity and personal courage, in order to conceal their natural defects.

There is a species of good humour different from the sympathy I have been speaking of, which is likewise amiable in a physician. It consists in a certain gentleness and flexibility, which makes him suffer with patience, and even apparent chearfulness, the many contradictions and disappointments he is subjected to in his practice. If he is rigid and too minute in his directions about regimen, he may be assured they will not be strictly followed; and if he is severe in his manners, the deviations from his rules will as certainly be concealed from him. The consequence is, that he is kept in ignorance of the true state of his patient; he ascribes to the consequences of the disease, what is merely owing to irregularities in diet, and attributes effects to medicines which were perhaps never taken. The errors which in this way he may be led into are sufficiently obvious, and might easily be prevented by a prudent relaxation of rules that could not well be obeyed. The government of a physician over his patient should undoubtedly be absolute: but an absolute government very few patients will submit to. A prudent physician should therefore prescribe such laws as, though not the best, are yet the best that will be observed; of different evils, he should choose the least; and, at no rate, lose the confidence of his patient, so as to be deceived by him as to his true situation. This indulgence, however, which I am pleading for, must be managed with judgment and discretion; as it is very necessary that a physician should support a proper dignity and authority with his patients, for their sakes as well as his own.

There is a numerous class of patients who put a physician's good nature and patience to a severe trial; those I mean who suffer under nervous ailments. Although the fears of these patients are generally groundless, yet their sufferings are real; and the disease is as much seated in the constitution as a rheumatism or a dropsy. To treat their complaints with ridicule or neglect, from supposing them the effect of a crazy imagination, is equally cruel and absurd. They generally arise from or are attended with bodily disorders obvious enough; but supposing them otherwise, still it is the physician's duty to do every thing in his power for the relief of the distressed. Disorders of the imagination may be as properly the object of a physician's attention as those of the body; and surely they are, frequently, of all distresses the greatest, and demand the most tender sympathy; but it requires address and good sense in a physician to manage them properly. If he seems to treat them slightly, or with unseasonable mirth, the patient is hurt beyond measure; if he is too anxiously attentive to every little circumstance, he feeds the disease. For the patient's sake therefore, as well as his own, he must endeavour to strike the medium between negligence and ridicule on the one hand, and too much solicitude about every trifling symptom on the other. He may sometimes divert the mind, without seeming to intend it, from its present sufferings, and from its melancholy prospects of the future, by insensibly introducing subjects that are amusing or interesting; and sometimes he may successfully employ a delicate and good-natured pleasantry.

We sometimes see a remarkable difference between the behaviour of a physician at his first setting out, and afterwards when he is fully established in reputation and practice. In the beginning, he is affable, polite, humane, and assiduously attentive to his patients; but afterwards, when he has reaped the fruits of such a behaviour, and finds himself independent, he assumes a very different tone; he becomes haughty, rapacious, and careless, and often somewhat brutal in his manners. Conscious of the ascendency he has acquired, he acts a despotic part, and takes a most ungenerous advantage of the confidence which people have in his abilities.

A physician, by the nature of his profession, has many opportunities of knowing the private characters and concerns of the families in which he is employed. Besides what he may learn from his own observation, he is often admitted to the confidence of those, who perhaps think they owe their life to his care. He sees people in the most disadvantageous circumstances, very different from those in which the world views them;—oppressed with pain, sickness, and low spirits. In these humiliating situations, instead of wonted chearfulness, evenness of temper, and vigour of mind, he meets with peevishness, impatience, and timidity. Hence it appears how much the characters of individuals, and the credit of families, may sometimes depend on the discretion, secrecy, and honour of a physician. Secrecy is particularly requisite where women are concerned. Independently of the peculiar tenderness with which a woman's character should be treated, there are certain circumstances of health, which, though in no respect connected with her reputation, every woman, from the natural delicacy of her sex, is anxious to conceal; and, in some cases, the concealment of these circumstances may be of consequence to her health, to her interest, and to her happiness.

Temperance and sobriety are virtues peculiarly required in a physician. In the course of an extensive practice, difficult cases frequently occur, which demand the most vigorous exertion of memory and judgment. I have heard it said of some eminent physicians, that they prescribed as well when drunk as when sober. If there was any truth in this report, it contained a severe reflection against their abilities in their profession. It shewed that they practised by rote, or prescribed for some of the more obvious symptoms, without attending to those nice peculiar circumstances, a knowledge of which constitutes the great difference between a physician who has genius and one who has none. Drunkenness implies a defect in the memory and judgment; it implies confusion of thought, perplexity, and unsteadiness; and must therefore unfit a man for every business that requires the lively and vigorous use of his understanding.

I may reckon among the moral duties incumbent on a physician, that candour which makes him open to conviction, and ready to acknowledge and rectify his mistakes. An obstinate adherence to an unsuccessful method of treating a disease, must be owing to a high degree of self-conceit, and a belief of the infallibility of a system. This error is the more difficult to cure, as it generally proceeds from ignorance. True knowledge and clear discernment may lead one into the extreme of diffidence and humility, but are inconsistent with self-conceit. It sometimes happens, too, that this obstinacy proceeds from a defect in the heart. Such physicians see that they are wrong, but are too proud to acknowledge their error, especially if it is pointed out to them by one of the profession. To this species of pride, a pride incompatible with true dignity and elevation of mind, have the lives of thousands been sacrificed.

LECTURE

LECTURE II.

Decorums and attentions peculiar to a physician.—How the obligations to these arise.—Duty of a physician with regard to adopting new remedies.—Duty in acquainting a patient and his relations of his situation.—Conduct of a physician when he despairs of the patient's life.—Conduct in regard to the profits of his profession.—Consultations.—Patients interest not to suffer by the quarrels of physicians.—Behaviour of young physicians to their seniors.—Distinction between physic, surgery, and pharmacy.—Dress.—Manners.—Affectation of delicacy.—Servility.—Remarks on secret medicines.—Charge of infidelity against physicians considered.

* * *

I PROCEED now to make some observations on the decorums and attentions peculiar to a physician,

cian, and such as tend most effectually to support the dignity of the profession.

Decorum, decency, and propriety, are words very indeterminate in their application; for this reason, that the ideas annexed to them are partly founded in nature and common sense, partly in caprice, fashion, and the customs of particular nations. In the first case, the obligation to them is immutable, the same in all ages and nations; in the latter, it is fluctuating and less binding. When it is necessary, I shall endeavour to mark this distinction.

I have already taken notice of the principal duties a physician owes to his patients; of the propriety of his attending to their tempers and constitutions, and allowing them every indulgence consistent with their safety. Sometimes a patient himself, sometimes one of his friends, will propose to the physician a remedy, which, they believe, may do him service. Their proposal may be a good one: it may even suggest to the ablest physician what, perhaps, till then, might not have occurred to him. It is undoubtedly, therefore, his duty to adopt it. Yet there are some of the faculty, who, from a pretended regard to the dignity of the profession, but in reality from mean and selfish views, refuse to apply any remedy proposed in this manner, without regard to its merit. But this behaviour can never be vindicated. Every man has a right to speak, where his life or his health is concerned; and every man may suggest what he thinks tends to save the life of his friend. It becomes them to interpose with politeness, and a deference to the judgment of the physician; it becomes him to hear what they have to say with attention, and to examine it with candour. If he really approves it, he should frankly own it, and act accordingly; if he disapproves, he should declare his disapprobation in such a manner as shews it proceeds from conviction, and not from pique or obstinacy. If a patient is determined to try an improper or dangerous medicine, a physician should refuse his sanction; but he has no right to complain of his advice not being followed.

A physician is often at a loss in speaking to his patients of their real situation, when it is dangerous. A deviation from truth is sometimes, in this case, both justifiable and necessary. It often happens that a person is extremely ill; but yet may recover if he is not informed of his danger. It sometimes happens, on the other hand, that a man is seized with a dangerous illness, who has made no settlement of his affairs; and yet perhaps the future happiness of his family may depend on his making such a settlement. In this and other similar cases, it may be proper for a physician, in the most prudent and gentle manner, to give a hint to the patient of his real danger, and even solicit him to set about this necessary duty. But, in every case, it behoves a physician never to conceal the real situation of the patient from his relations. Indeed justice demands this; as it gives them an opportunity of calling for further assistance, if they should think it necessary. To a man of a compassionate and feeling heart, this is one of the most disagreeable duties in the profession: but it is indispensible. The manner of doing it requires equal prudence and humanity. What should reconcile him the more easily to this painful office, is the reflection that, if the patient should recover, it will prove a joyful disappointment to his friends; and, if he dies, it makes the shock more gentle. Let me here exhort you against the custom of some physicians, who leave their patients when their life is despaired of, and when it is no longer decent to put them to farther expence. It is as much the business of a physician to alleviate pain, and to smooth the avenues of death, when unavoidable, as to cure diseases. Even in cases where his skill as a physician can be of no further avail, his presence and assistance as a friend may be agreeable and useful both to the patient and to his nearest relations. Neither is it proper that he should withdraw when a clergyman is called to assist the patient in his spiritual concerns. On the contrary, it is decent and fit that they should mutually understand one another, and act together. The conversation of a clergyman of cheerful piety and good sense, in whom a sick man confides, may sometimes be of much more consequence, in composing the anguish of his mind and the agitation of his spirits, than any medicine; but a gloomy and indiscreet enthusiast may do great hurt; may terrify the patient, and contribute to shorten a life that might otherwise be saved.

There are often unhappy jealousies and animosities among those of the profession, by which their patients may suffer. A physician, however, who has any sense of justice or humanity, will never involve his patient in the consequences of private quarrels, in which he has no concern. Physicians in consultation, whatever may be their private resentments, or opinions of one another, should divest themselves of all partialities, and think of nothing but what will most effectually contribute to the relief of those under their care. If a physician cannot lay his hand to his heart, and say that his mind is perfectly open to conviction, from whatever quarter it shall come, he should in honour decline the consultation. Many advantages arise from two physicians consulting together, who are men of candour, and have mutual confidence in each other's honour. A remedy may occur to one which did not to another; and a physician may want resolution, or sufficient confidence in his own opinion, to prescribe a powerful but precarious remedy, on which, however, the life of his patient may depend; in this case the concurring opinion of his brother may fix his own. But, if there is no mutual confidence; if opinions are regarded, not according to their intrinsic merit, but according to the person from whom they proceed; or, if there is reason to believe that sentiments, delivered with openness, are to be whispered abroad, and misrepresented to the public, without regard to the obligations of honour and secrecy; and if, in consequence of this, a physician is singly to be made responsible for the effects of his advice; in such cases, consultations of physicians tend rather to the detriment than to the advantage of the sick; and the usual and indeed most favourable conclusion of them is some very harmless but insignificant prescription.

The quarrels of physicians, when they end in appeals to the public, generally hurt the contending parties; but, what is of more consequence, they discredit the profession, and expose the faculty itself to ridicule and contempt. Nothing, in my opinion, but the following cause can justify any physician for refusing to consult with another, when he is required to do so. If he is conscious he cannot behave with temper, and that his passions are so ruffled as to impair his judgment, he may and ought to refuse it. But such circumstances, as the university where the person he is to consult with took his degree, or indeed whether he had a degree from any university or not, cannot justify his refusal. It is a physician's duty to do every thing in his power, that is not criminal, to save the life of his patient; and to search for remedies from every source, and from every hand, however mean and contemptible. This, it may be said, is sacrificing the dignity and interests of the faculty.

culty. But, I am not here speaking of the private police of a corporation, or the little arts of a craft. I am treating of the duties of a liberal profession, whose object is the life and health of mankind; a profession to be exercised by gentlemen of honour and ingenuous manners; the dignity of which can never be supported by means that are inconsistent with its ultimate object, and that tend only to increase the pride, and fill the pockets, of a few individuals.

It becomes young physicians to be particularly attentive to the propriety of their behaviour when consulting with their seniors. Besides the respect due to age, these are entitled to a particular deference from their longer and more extensive experience. The revolutions indeed of medical hypotheses and systems are so quick, that an old and a young physician seldom reason in the same way on subjects of their profession; although the difference be sometimes rather apparent than real, when they use only a different language to express sentiments essentially the same. But it generally happens, that the speculations which principally engage the attention of young physicians, seldom in any degree affect their practice; and therefore, as they are in a great measure foreign to the business, they should never introduce them in medical consultations. They shew equal want of sense and good manners, when they wantonly take opportunities of expressing contempt for opinions as antiquated and exploded, in which their seniors have been educated, and which they hold as firmly established. A little reflection might teach them, that it is not impossible, but, in the course of a few years, their own most favourite theories may be discovered to be as weak and delusive as those which have gone before them; and this should lead them to consider how sensibly they may be hurt themselves, when they find those idols of their youth attacked by the petulant ridicule of the next generation; when, perhaps, they are arrived at a time of life when they have neither abilities nor temper to defend them.

The same respect that ought to be shewn to the opinions of elder physicians, should be extended to their favourite authors, and indeed to all such writers in medicine as have contributed to its advancement, and whose names, in the successive ages of physic, have been revered by the wisest and most learned of the profession. It is equally prudent and decent for young practitioners, when they differ in opinion from the rest of mankind, to express their dissent with modesty and good-manners. Their abuse of characters, which have been generally esteemed, has more the appearance of petulance and self-conceit than of the liberal and ingenuous spirit that flows from the love of truth. There is indeed an ardent love of freedom, and an impatience of the controul of authority in all matters of sentiment and reasoning, which is both natural and proper in young men. This high spirit is very properly shewn when they expose to ridicule such authors as are remarkably vain and ostentatious, or when they chastise the insolence of such as are assuming, supercilious, and dictatorial; but, in speaking of such men as Hippocrates, Sydenham, or Boerhaave, who were no less eminent for their candour and modesty, than for their genius and merit in their profession, at the same time that their opinions are canvassed with freedom, their characters should be treated not only with decency but with reverence.

There have arisen at different periods, and particularly in France about twenty years ago, great disputes about the boundary of physic and surgery, and the proper subordination of surgery to medicine. A dispute hurtful to mankind, and which has been often conducted in a manner unworthy of scholars and gentlemen. I shall embrace this opportunity of giving my sentiments concerning it.

There was anciently, as Celsus informs us, a division of medicine into three parts: the first regarded the regulation of diet; the second, the prescription of remedies; the third, manual operations, or surgery. The first two, though distinguished in theory, were always united in practice; the last has often been exercised separately. Sometimes the ancient physicians performed the manual part themselves; at other times, it was done by slaves kept for that purpose. Among the moderns, the arts of physic and surgery have often been promiscuously practised by the same persons; for example, Hildanus, Severinus, Bartholine, and many others of distinguished genius and learning. But, in many parts of Europe both now and formerly, surgery has not been reckoned among the liberal professions, but surgeons have ignominiously been classed with the corporation of barbers. In such places, we may reasonably suppose, that this art must be often practised by men of the lowest rank, who have never received a liberal education. The separation of physic from surgery in modern times, has been productive of the worst consequences. The physicians and surgeons, formed into separate societies, had separate interests to support, which, in many cases, clashed with each other. The surgeons claimed not only the exclusive privilege of performing all operations, but likewise the management of most external and some internal diseases, where operations were supposed to be often necessary; by which means the method of cure in many diseases was sometimes left to the direction of ignorant as well as illiterate men. But it must be apparent to every sensible and ingenuous observer, that the diseases of the human body are so intimately connected, that it is impossible to understand some of them perfectly and be entirely ignorant of all the rest; and hardly possible to understand any of them, without some knowledge of Anatomy, and of the Animal oeconomy, both in its sound and morbid state. It must at the same time be owned, that a practitioner, well grounded in such general knowledge, may have considerable advantages, and more readily make improvements, by attaching himself to the study of one or two particular diseases.—Every distemper, external as well as internal, falls under the cognizance of the physician, and it is a reflection on him to be ignorant of any of them; neither is it possible to fix any such precise boundaries between external and internal diseases, as to render the distinction in any degree useful, or applicable in practice. Suppose a person to break his leg, and a fever and gangrene to enſue; the question occurs, whether the limb should be immediately amputated, or whether we should wait for some time till the effects of certain medicines, given with a view to stop the progress of the mortification, are known. It is evidently the business of a physician, in this case, to judge from the symptoms, from the habit of body, and from other circumstances, whether the delay is prudent or not.—As to the performance of the operation itself, that is a different question. The genius and education requisite to make a good physician, are not necessary to make a good operator. What is peculiarly necessary to make a good operator, is a resolute, collected mind, a good eye, and a steady hand. These talents may be united with those of an able physician; but they may also be separated from them. If surgery was confined to a set of men who were to be merely operators, it might justly be expected that the art would be more quickly brought to perfection by such men, than by those who follow a more complicated business, and practise all the branches of medicine. The same advantage would accrue to pharmacy, if apothecaries were to be confined to the mere business of preparing medicines. But, in reality, this is not the case. In some parts of Europe, surgeons act as physicians in ordinary; in others, the apothecaries do this duty, without a medical education. The consequence is, that in many places physic is practised by low, illiterate men, who are a disgrace to the profession. In regard to pharmacy, it were much to be wished, that those who make it their business should have no connection with the practice of physic, or that physicians should dispense their own medicines, and either not charge the expence of them to their patients at all, or charge it at the prime cost. It is only in one or other of these ways, that we can ever hope to see that simplicity of prescription take place in the practice of medicine, which all who understand its real interests so ardently wish for ; and it is only from such an arrangement that we can expect to see physicians placed in that honourable independence, which subjects them to no attentions but such as tend to the advancement of their art. But it is a known fact, that, in many parts of Europe, physicians, who have the best parts and best education, must frequently depend for their success upon apothecaries, who have no pretensions either to the one or the other ; and that the obligation to apothecaries is too often repaid, by what every one, concerned for the honour of medicine, must reflect on with indignation.

From what I have said, it is evident that I have no intention to throw reflections upon any particular branch of the profession. Every department of it is respectable, when exercised with capacity and integrity. I only contend for an evident truth, either that the different branches should be separately professed, or, if one person will profess all, that he should be regularly educated to, and thoroughly master of all. I am not here adjusting points of precedence, or insinuating the deference due to degrees in medicine. As a doctor's degree can never confer sense, the title alone can never command regard; neither should the want of it deprive any man of the esteem and deference due to real merit. If a surgeon or apothecary has had the education, and acquired the knowledge of a physician, he is a physician to all intents and purposes, whether he has a degree or not, and ought to be respected and treated accordingly. In Great Britain, surgery is a liberal profession. In many parts of it, surgeons or apothecaries are the physicians in ordinary to most families, for which trust they are often well qualified by their education and knowledge; and a physician is only called where a case is difficult, or attended with danger. There are certain limits, however, between the two professions, which ought to be attended to; as they are established by the customs of the country, and by the rules of their several societies. But a physician, of a candid and liberal spirit, will never take advantage of what a nominal distinction, and certain privileges, give him over men who, in point of real merit, are his equals; and will feel no superiority, but what arises from superior learning, superior abilities, and more liberal manners. He will despise those distinctions founded in vanity, self-interest, or caprice; and will be careful, that the interests of science and of mankind shall never be hurt, on his part, by a punctilious adherence to formalities.

Among the peculiar decorums of a physician's character, much stress has been laid on a certain formality in dress, and a particular gravity in his behaviour. I have before observed, that decorum and propriety have their foundation sometimes in nature and common sense, sometimes only in caprice and fashion. This observation may be exemplified by the present subject. In many stations, a particular formality and pomp of dress is highly proper, independently of any fashion whatever; for example, in judges, and in magistrates. Whatever

ever circumſtance in their mode of dreſs, or external appearance, make them the objects of awe and reverence, are neceſſary and decent; becauſe they impreſs the minds of the people with a due veneration, and fear of the laws. Neither is there any danger of abuſe from this reverence procured to the office of a magiſtrate. The caſe is very different in the profeſſion of medicine. There is no natural propriety in a phyſician's wearing one dreſs in preference to another; it not being neceſſary that any particular reſpect or authority ſhould be annexed to his office, independent of what his perſonal merit commands. Experience, indeed, has ſhewn, that all our external formalities have been often uſed as ſnares to impoſe on the weakneſs and credulity of mankind; that in general they have been moſt ſcrupulouſly adhered to by the moſt ignorant and forward of the profeſſion; that they frequently ſupplant real worth and genius; and that, far from ſupporting the dignity of the profeſſion, they often expoſe it to ridicule. If then there is no natural and real propriety in a physician's wearing a distinguishing dress, he can be under no obligation to use it, but what arises from the particular fashion of the country where he resides. This is an obligation, however, which common sense and prudence make it necessary he should regard. If the customs or prejudices of any country affix the idea of sense, knowledge, or dignity to any mode of dress, it is a physician's business, from motives of prudence, to equip himself accordingly. But, in a country where a physician's capacity is not measured by such standards, and where he may dress like other people without sinking in their estimation, I think he is at full liberty to avail himself of this indulgence, if he so chuses, without being considered as deviating from the propriety and decency of his profession.

In some cases, there is a great impropriety in a physician's having any distinguishing formality in his dress or manners. I do not hint merely at the disagreeable impression, not to say terror, with which this sometimes affects the minds of children. Even among people who possess the greatest vigour and firmness of mind when in health, there is often a feebleness and depression of spirits attendant on sickness, that renders the sight of any stranger whatever very painful. In such a state of mind, the visit of a physician, even when wished for, is often particularly dreaded, as it naturally awakens the apprehensions of danger; apprehensions which a formal dress, and a solemn behaviour, are ill calculated to dispel. Surely, if there is at any time a propriety in an easy, cheerful, soothing behaviour, it must be on such an occasion, where it is so necessary to forget the physician in the friend.

I see, indeed, no reason why the general character of a physician's manners should be any way singular. They may be affable without meanness, grave without formality, and cheerful without levity. They will naturally vary according to the circumstances in which he is placed. How different the appearance of a physician rejoicing with his patient at his restoration to health and spirits, or communicating to his friends the accounts of his approaching dissolution! If, however, the manners of a country require that he should observe the same unvaried face and solemnity, unmoved by every object around him; and equally unsusceptible of joy or sorrow, he must submit; but if, without such necessity, he voluntary lays himself under these or any other restraints, and assumes a fictitious character; there is reason to suspect the qualities either of his heart or of his understanding.

A physician should carefully guard against any little peculiarities stealing into his manners, which can in any degree render him an object of ridicule. Young physicians, in particular, will much deceive themselves, if they imagine they can indulge in such particularities with the same impunity that their seniors sometimes do. It is indeed an observation, which perhaps does no great honour to mankind, that, when once a physician's reputation for knowledge in his profession comes to be thoroughly established, almost every peculiarity of manners, even some that would be in other men offensive, deepen the impression made on the imagination by his supposed merit, and increase his popularity and fame.

There is great impropriety in a physician's indulging himself in a certain delicacy, which makes him liable to be disgusted with some disagreeable circumstances he must unavoidably meet with in his practice. Genuine delicacy is a virtue of the mind; and though it shews itself by an attachment to cleanliness, neatness, and even elegance where it can be afforded, yet it always gives place, and forgets itself, where duty or the interests of humanity require it. It is a mistake in a physician to think any attentions, or duties, below his dignity, which can contribute to the relief of his patient. When necessity calls, he acts unworthily, if he does not become, to the best of his abilities, surgeon, apothecary, and even nurse. If, however, without such necessity, he encroaches on another's province, then, indeed, he degrades himself; not because he acts below the dignity of a physician, but because he behaves in a manner unbecoming the character of a gentleman.

The attendance given to a patient should be in proportion to the urgency and danger of his complaints. As the physician is the best judge of this, he should regulate his visits accordingly. But some delicacy is often required, to prevent such frequent visits as may be necessary, from bringing an additional expence upon the patient. A patient is entitled to the whole attention of his physician, while he remains with him. Whatever other business or avocations he may have, he should dedicate that time entirely to him. That continual hurry which some of our profession seem to be in, is sometimes mere affectation; but it often proceeds from other causes. Some keep themselves constantly embarrassed by a want of oeconomy of their time, and of a proper arrangement of their business; some from a liveliness of imagination, and an unremitting activity of mind, involve themselves in such a multiplicity of pursuits, as cannot be overtaken. But from whatever source it arises, it ought to be timely corrected, and not suffered to grow into a habit. It prevents a physician from doing his duty to the sick, and at the same time weakens their confidence in him.

Having freely expressed my sentiments concerning what I think wrong in the conduct of some of our faculty, I shall now, with the same freedom, animadvert on a particular circumstance not unfrequent in the behaviour of other learned men, as well as physicians, which seems to me essentially injurious to the dignity of our profession; I mean that servility of manners towards people of rank and fortune, which so often disgraces men in other respects eminent for learning and ingenuity. The external magnificence and splendour attendant on high rank is apt sometimes to dazzle their understanding, and make them pay too much veneration to those outward distinctions of title and fortune, which their philosophy ought to make them despise.

Great disputes have arisen in our profession about the propriety of a physician's keeping secrets or nostrums. It has been said, with some plausibility, in vindication of this practice, that the bulk of mankind seldom attend, or pay much regard, to what is made level to their capacities; and that they are apt to undervalue what costs them nothing. Experience shews, that men are naturally attached to whatever has an air of mystery and concealment. A vender of a quack medicine does not tell more lies about its extraordinary virtues, than many people do who have no interest in the matter; even men of sense and probity. A passion for what is new and marvellous operates more or less on the imagination; and, in proportion as that is heated, the understanding is perplexed. When a nostrum is once divulged, its wonderful qualities immediately vanish, and in a few months it is generally forgotten. If it is really valuable, the faculty perhaps adopt it, but it never recovers its former reputation.—It is likewise said, that this is the only way in which any good medicine can be introduced into practice; as the bulk of mankind will more readily follow the directions of a man who professes to cure them by mysterious means, than those of a regular physician, who prescribes plain and common remedies. It is further alleged, that some of the best medicines were originally introduced as secrets, though opposed by the regular physicians. But allowing this to be true, yet I am persuaded that nostrums, on the whole, do more harm than good; that they hinder the advancement of our art, by making people neglect what is known and approved, in pursuit of what is unknown, and probably never to be divulged; and that, from their being generally dispensed by low and illiterate men, who prescribe them indiscriminately, they are become a public nuisance in these kingdoms.—In some places on the continent, however, physicians of honour and reputation keep nostrums. In such hands, the same abuses will not be committed, as we experience here; but still the practice has an interested and illiberal appearance.

Curiosity in a patient or his friends to know the nature of the medicines prescribed for him is natural, and therefore not blameable; yet this is a curiosity which it is often very improper to gratify. There is a natural propensity in mankind to admire what is covered with the veil of obscurity, and to undervalue whatever is fully and clearly explained to them. A firm belief in the effects of a medicine depends more on the imagination, than on a rational conviction impressed on the understanding; and the imagination is never warmed by any object which is distinctly perceived, nor by any truth obvious to common sense. Few people can be persuaded that a poultice of bread and milk is in many cases as efficacious as one compounded of half a dozen ingredients, to whose names they are strangers; or that a glass of wine is, in most cases where a cordial is wanted, one of the best that can be administered. This want of faith in the effects of simple known remedies, must of necessity occasion a disregard to the prescription, as well as create a low opinion of the physician. Besides, where a patient is made acquainted with the nature of every medicine that is ordered for him, the physician is interrupted in his proceedings by many frivolous difficulties, not to be removed to the satisfaction of one ignorant of medicine. The consequence of this may be to embarrass the physician, and render him irresolute in his practice; particularly in the administration of the more powerful remedies. It should be further considered, that when a patient dies, or grows worse under the care of a physician, his friends often torment themselves, by tracing back all that has been done, if they have been made acquainted with it, and may thus be led, very unjustly, to charge the physician with what was the inevitable consequence of the disease. There are indeed cases where it may be proper to acquaint a patient with the nature of the remedies, which it is proposed to employ, as there are in some patients peculiarities of constitution that require great attention, with regard both to the quality and to the quantity of certain medicines, of which peculiarities a physician ought to be informed before he prescribe such medicines.

I shall conclude this subject with some observations on a charge of a heinous nature, which has been often urged against our profession; I mean that of infidelity, and contempt of religion. I think the charge ill founded; and will venture to say, that the most eminent of our faculty have been distinguished for real piety. I shall only mention, as examples, Harvey, Sydenham, Arbuthnot, Boerhaave, Stahl, and Hoffman.—It is easy, however, to see whence this calumny has arisen. Men whose minds have been enlarged by knowledge, who have been accustomed to think, and to reason upon all subjects with a generous freedom, are not apt to become bigots to any particular sect or system. They can be steady to their own principles without thinking ill of those who differ from them; but they are impatient of the authority and control of men, who would lord it over their consciences, and dictate to them what they are to believe. This freedom of spirit, this moderation and charity for those of different sentiments, have frequently been ascribed, by narrow-minded people, to secret infidelity, scepticism, or, at least, to lukewarmness in religion; while some who were sincere Christians, exasperated by such reproaches, have sometimes expressed themselves unguardedly, and thereby afforded their enemies a handle to calumniate them. This, I imagine, has been the real source of that charge of infidelity so often and so unjustly brought against physicians. In a neighbouring nation, where few people have been used to think or to reason with freedom on religion, and where, till of late, no man durst express himself freely on the subject, some ingenious and lively writers have, within these few years, appeared, who, impatient to display their newly-acquired liberty, have attempted to shake the foundations of all religion, natural as well as revealed. Lately emancipated from the lowest superstition, by a transition not unnatural, they have plunged at once into Atheism. It is perhaps for the better, that these gentlemen have carried matters so far; because it is to be hoped the evil will soon cure itself. Mankind may have their religious opinions disfigured by various superstitions; but still religion is natural to the human mind; and every attempt to eradicate it will be found as impotent as it is wicked. But, supposing that Atheism came universally to prevail, together with the disbelief of the immortality of the soul, the duration of such sentiments would necessarily be very short; because they would at once unhinge all the bonds of society, and produce a continued scene of anarchy and wickedness. Divested of that uncouth, metaphysical dress, under which they long lay concealed, the gloomy speculation of a few recluse men, they are now produced to the world, adorned with what passes among many for wit and humour, and adapted to every capacity. So far as they contain any argument, their weakness has been often demonstrated. One method taken by the present patrons of infidelity to propagate their opinions is somewhat dangerous. With much assurance, they insinuate, that all who avow their belief in natural or revealed religion, are either hypocrites or fools. This is attacking youth on their weak side. A young man, of a liberal spirit, naturally disdains the idea of hypocrisy; and, from an ill-judged pride, is afraid of whatever may subject him to so mean an imputation. Vanity, again, is their most ruling passion, as they commonly dread contempt above every thing, and resent reflections on the weakness and narrowness of their understanding, more than any charge against their principles or morals. But I will venture to say, that men of the most enlarged, clear, and solid understandings, who have acted with the greatest spirit, dignity, and propriety, and who have been regarded as the most useful and amiable members of society, have never openly insulted, or insidiously attempted to ridicule, the principles of religion; but, on the contrary, have been its best and warmest friends.—The study of medicine, of all others, should be the least suspected of leading to impiety. An intimate acquaintance with the works of Nature raises the mind to the most sublime conceptions of the Supreme Being, and at the same time dilates the heart with the most pleasing views of Providence. The difficulties that necessarily attend all deep inquiries into a subject so disproportionate to the human faculties, should not be suspected to surprise a physician, who, in his practise, is often involved in perplexity, even in subjects exposed to the examination of his senses.

There are, besides, some peculiar circumstances in the profession of a physician, which should naturally dispose him to look beyond the present scene of things, and engage his heart on the side of religion. He has many opportunities of seeing people, once the gay and the happy, sunk in deep distress; sometimes devoted to a painful and lingering death: and sometimes struggling with the tortures of a distracted mind. Such afflictive scenes, one should imagine, might soften any heart, not dead to every feeling of humanity, and make it reverence that religion which alone can support the soul in the most complicated distresses; that religion which teaches to enjoy life with cheerfulness, and to resign it with dignity. A physician, who has the misfortnne to disbelieve in a future state, will, if he has common good-nature, conceal his sentiments from those under his charge, with as much care as he would preserve them from the infection of a mortal disease. With a mind unfeeling, or occupied in various pursuits, he may not be aware of his own unhappy situation; yet it is barbarous to deprive expiring nature of its last support, and to blast the only surviving comfort of those who have taken a last farewel of every sublunary pleasure. But, if motives of humanity, and a regard to the peace and happiness of society, cannot restrain a physician from expressing sentiments destructive of religion or morals, it is vain to urge the decency of the profession. The most favourable construction we can put on such conduct, is to suppose that it proceeds from an ungovernable levity, or a criminal vanity, that forgets all the ties of morals, decency, and good manners.

I shall make no apology for going a little out of my way in treating of so serious a subject. In an inquiry into the office and duties of a physician, I deemed it necessary to attempt to wipe off a reflection so derogatory to our profession; and, at the same time, to caution you against that petulance and vanity in conversation, which may occasion imputations of bad principles, equally dangerous to society, and to your own interest and honour.

LECTURE III.

CONNECTION of the several branches of physic with its practice.—Impropriety of wasting too much time in the study of these branches.—Necessity of a knowledge of anatomy, and physiology—of natural philosophy, chemistry.—Laws of union between the soul and body, and of the nervous system, not explicable upon mechanical or chemical principles.—Comparative anatomy.—Pathology.—Theory of physic, what it properly signifies.—Materia medica.—Botany.—Natural history.—Necessity of a physician's being well founded in these preliminary sciences.—Ornamental qualifications.—Knowledge of the history of physic.—Of mathematics—of the Latin, Greek, and French languages—of our native language.—Observations on the style and composition proper for medical writings.

LECTURE III.

I PROCEED now to explain the connections of the several branches of physic with the practical part of it, and to inquire how far a previous knowledge of these is necessary, in order to practise with reputation and success.

Here I must previously observe, that all the works of Nature are so intimately connected, that no one part of them can be well understood by considering and studying it separately. In order therefore to be qualified for the practice of physic, a variety of branches of knowledge, seemingly little connected, are nevertheless necessary. As this is the case, it is proper that a student should be on his guard not to waste his time and labour in pursuits which have either no tendency, or a remote one, to throw light on his profession. Life is too short for every study that may be deemed ornamental to a physician; it will not even allow time for every study that has some connection with physic. Every one of the sciences I am about to name is of great extent; but it will be necessary for a physician to confine his application to such parts of them as are really subservient to practice. If a student's genius inclines him more particularly to any of these preliminary sciences, he may, if he pleases, indulge himself in it, taking care not to impose on himself, and consider this as studying physic.

The necessity of a previous knowledge of anatomy to the practice of physic, is apparent, and needs no illustration.

The necessity of the knowledge of physiology, which comprehends the doctrine of the animal fluids, and of all the functions in their sound state, is equally evident.—When you inquire into this subject, you find the human body a machine, constructed upon the most exact mechanical principles. In order, then, to understand its movements, you must be well acquainted with the principles of mechanics. Considering the human body in another view, you find fluids of different kinds circulating through tubes of various diameters; the laws of their motions, therefore, cannot be understood, without a knowledge of hydraulics. The eye appears to be an admirable optical machine; and, of course, the phenomena of vision cannot be explained, without a knowledge of the principles of optics. As the human body is surrounded with an elastic fluid, the air, subject to various changes, in respect of gravity, heat, moisture, and other qualities which have great influence on the constitution, it is proper to be acquainted with the nature and properties of this fluid; the knowledge of which constitutes the science of pneumatics. It were easy to bring many more examples, to shew how necessary a knowledge of the various branches of natural philosophy, is to the right understanding of the animal oeconomy.

But the different phenomena of the animal oeconomy are not all to be explained from common mechanics; various changes are induced upon the fluids from chemical principles. It is, therefore, necessary to be acquainted with the chemical history of our fluids, and with the chemical analysis of whatever is taken into the human body as food or medicine, and, in general, of all the substances which can, in any degree, influence it. This shews the necessity of a knowledge of chemistry, previous to the study of the practice of physic.

Yet the most accurate knowledge of anatomy, and of the principles of mechanics and chemistry, are insufficient to explain all the phenomena in the body. The animal machine differs in many respects from an inanimate one. The former has a power of beginning motion within itself. An internal principle directs and influences most of the operations of the body, by a set of laws totally distinct from, and independent of, any principles of mechanics or chemistry hitherto known. An animal body likewise differs from a common machine, in having a power, to a certain degree, of curing its own disorders, and rectifying many deviations from its natural state; as in the case of fractured bones, incarnation of wounds, enlargement of one kidney when the other is destroyed or rendered useless, and in the successful efforts of Nature in the cure of many diseases. Many feeble attempts have been made to explain the phenomena of the animal body upon mechanical and chemical principles alone, but without success.

The laws of the nervous system, though of the most difficult investigation, are equally steady and regular with any other laws of Nature; so are the laws relating to the mutual influence of the mind and body upon each other; a very important inquiry to a physician. This leads to an extensive and interesting subject, the history of the faculties of the human mind, which, if we are not on our guard, is apt to lead us insensibly into a labyrinth of metaphysics. A student of genius should be watchful lest his attention be too deeply engaged by this specious kind of philosophy, which gives so much room for imagination, and so little for experiment; apparently ingenious, but really trifling and useless; a philosophy, in short, which, by keeping the mind incessantly employed about subtleties of its own creation, soon renders it incapable of a patient and severe investigation of Nature.

In order to illustrate the human physiology, a knowledge of the comparative anatomy of some animals that most nearly resemble man is requisite. Several important discoveries in the animal oeconomy have been illustrated by experiments first made on brutes, many of which could not have been made on the human subject, e. g. experiments relating to the circulation of the blood, respiration, muscular motion, sensibility and irritability of different parts of the body, and the effects of various medicines.

dicines. The instincts of brutes have sometimes given the first hint of valuable remedies, and might throw light on the subject of regimen, and the cure of diseases, if they were properly attended to. At the same time, it must be acknowledged, that the comparative anatomy has often led into great mistakes, when too hastily applied to the human body.

The writers on physiology have usually considered the body as a permanent subject, exhibiting uniformly the same appearances; but, in applying the knowledge of the animal oeconomy to practice, it is necessary to consider the human constitution as perpetually fluctuating, and not, perhaps, exactly the same in any two persons. It were endless to trace the diversity of constitutions among mankind, neither would it be an inquiry of much utility; but there are some varieties which it is necessary to attend to. These depend chiefly on the difference of age, sex, climate, and manner of living; and some original temperaments, or habits of body, not produced by any of these circumstances.

cumstances. It belongs to physiology to inquire into the laws of the union between the mind and the body; into the effects of culture and education upon the constitution; into the power of habit, the effects of enthusiasm, and force of imagination. This short detail shews how extensive a study physiology is, and how intimately connected with the study of the practice of medicine.

As physiology considers the whole appearances of the animal oeconomy in its sound state, pathology considers those in a morbid state. It delivers the general doctrine of the causes, effects, and symptoms of diseases. The *therapeia* treats of the general laws to be observed in the cure of diseases, and of the general nature of the remedies. This includes surgery and the *materia medica*. The usefulness of a knowledge of mechanics appears most evidently in the practice of surgery. This art has, in fact, received the greatest improvement within these hundred years, since the doctrine of mechanics came to be more generally understood.

The physiology, pathology, and therapeutics, form what are called the Institutions of Medicine, and, by some, the Theory of Physic. The world has been so long abused by ill-founded, though sometimes plausible, hypotheses, assuming the name of Theories, that a general prejudice now prevails against the very expression, *Theory of physic*, as if it contained nothing but useless disquisitions, a display of arrangement, subtle distinctions chiefly nominal, and an establishment of general principles, many of them false, and others so vague or ambiguous as to be incapable of any useful application. But this is a false representation of the theory or institutions of medicine. These ought to contain every fact tending to illustrate the animal oeconomy either in its sound or diseased state, and every fact that may be useful to a physician in forming indications of cure. These facts ought to be accurately arranged, so as either to establish general principles, or at least to point at them, especially at such as lead to practice.

In this view, the institutions become a natural preliminary to the practice of physic.

A knowledge of the *materia medica* is intimately connected with the practice of medicine. It contains the doctrines of the various means by which a physician operates, and a history of the effects of medicines. In this branch the use of chemical knowledge is apparent. It teaches how to preserve and separate the useful parts of medicines. But, in order to understand pharmacy, the knowledge of chemistry is indispensible. For want of this knowledge, at least for want of a proper application of it, true pharmacy has, till of late, been little understood.

The effects of medicines on the human body are sometimes to be explained upon mechanical, sometimes upon chemical, principles ; but much oftener depend on the effects they produce upon the nervous system ; and, in consequence of these, upon an excess or deficiency of the various animal motions and secretions.

The science of botany is subservient to the practice of physic, so far as it facilitates the knowledge of plants by reducing them into the most commodious system; and, though it is not necessary for a physician to be particularly acquainted with the name and history of every plant, yet he ought to be so well grounded in the principles of botany, as to be able to find its place in the system, and to be particularly acquainted with those plants which are used either in diet or in medicine.

I have now shortly explained the connection of the several branches of physic, with the *praxis medica*, which comprehends the *hygieine*, or the method of preserving health and prolonging life, and the application of general pathology, and general therapeutics, to the history and cure of particular diseases. It will naturally then be asked, is a person unqualified for the practice of physic and surgery, who is not master of all these parts of learning, which have been deemed to be necessary preliminaries? To this it may be answered, That one may, in some measure, practice medicine as he may do a mechanic art, without much knowledge of its principles. A sailor may navigate a ship, who knows little of the principles of navigation; and a person may make a dial, who knows nothing of astronomy, spherical trigonometry, or the projection of the sphere. It is the same in all the other practical arts of life; and yet in all these, there are obvious advantages arising from a knowledge of the principles on which they are founded. But in medicine, the necessity of being acquainted with the *principia* of the art is much greater; because there can be no general rules laid down for the practice of physic, which can be applied in all cases. Differences of age, of constitution, of climate, and many other circumstances, occasion variations in the application of the plainest remedies that can be prescribed; and, without a knowledge of the principles of his profession, a physician must be often at a loss. It will be readily acknowledged, that there have been many physicians successfull in practice, who, at the same time, were deficient in the knowledge of the foundations of medicine. But this has been owing to their uncommon genius and sagacity, which enabled them to apply what little knowledge they had with judgment, and consequently with success; while, perhaps, another physician, better founded in his profession, for want of this natural genius and sagacity, has blundered in his practice, by a wrong application of his knowledge. Besides, as medicine is so complicated a science, many of those who study it regularly, take a particular attachment to some of its parts, and these so far engage their attention, that they neglect the study of the other branches. In consequence of this, some of our profession have been distinguished for their skill in anatomy, chemistry, and botany, who nevertheless have been very indifferent physicians. But, although a profound knowledge of these sciences is insufficient of itself to make a good practical physician, yet no man of sense will infer from thence that they are not eminently useful.

I do not insist here on the necessity of a minute knowledge of these sciences; nor indeed could time be spared to acquire it. A particular acquaintance with the appearance of the muscles, in all the various motions and attitudes of the body, is a study more necessary to a painter, or to a statuary, than to a physician; and, in this view, they ought to be expert anatomists. If chemistry is prosecuted in its full extent and application to all the useful arts, it is a boundless study: so is botany, if we would be acquainted with every circumstance of every plant. It is therefore necessary, that a student, while he endeavours to make himself master of the leading and fundamental principles of these sciences, should always have an eye to their application to his own profession, and bend his attention to that quarter.

On the whole, I hope, it will appear, that a physician who understands the principles of his profession, who has an extensive acquaintance with every branch of natural knowledge connected with it, who properly applies his knowledge, and who has genius and attention equal to others, must have a great advantage as a practical physician, over one who is ignorant of the principles of medicine, and of the sciences connected with it. Genius and sense are, indeed, the peculiar gifts of Heaven, and cannot be acquired by the most extensive learning, or the greatest efforts of industry. But, with these assistances, genius and sense are capable of the highest improvements.

Besides the above mentioned branches of learning, which are in a manner essential to the rational practice of physic, there are others, of which, though they may be deemed rather ornamental than necessary, yet an accomplished physician should not be ignorant.

It may be reasonably expected, that every gentleman should be acquainted with the history of the science which he professes. The history of medicine is not a subject of mere curiosity. To a physician, it is an useful and interesting inquiry. It is indeed an unpleasant task, and, at first view, seems an useless one, to inquire into the numerous theories, that have influenced the practice of physic in different ages. Of these there has been a succession which, in their turn, have been admired, and which have greatly influenced the practice of physic, and afterwards sunk into deserved oblivion. If their bad effects had ceased with the follies which gave them birth, it would have been unnecessary to revive their memory. But this has not been the case. A wrong practice, introduced in consequence of a prevailing theory, soon becomes diffused among people who are no judges whether the theory itself be well or ill founded. A physician of spirit and ingenuity, perhaps, rises up, and shews the absurdity of the theory; but it is not in his power to remove its pernicious consequences in practice. These were soon spread among a thousand ignorant people, who had adapted them to a theory of their own: for it must be observed, that the most illiterate pretenders to physic have their theories; and such pretenders, partly from ignorance, partly from pride, and partly from habit, are, of all others, the most obstinately attached to them.

A thorough knowledge of the history of physic, by discovering the sources of the maxims and remedies adopted in practice, will naturally make a physician suspicious of those which were introduced by false reasoning or superstition. Yet it must be owned, that some valuable remedies have sometimes been discovered in consequence of absurd theories. Another advantage attending a knowledge of the history of physic, is its bringing us acquainted with some efficacious remedies, which time and other accidents had thrown into disuse.

The change of manners, and the variations of our speculative systems of physic, have in some degree, contributed to the less general use of certain bold but successful remedies, employed by the ancients; as might be exemplified in the case of cauteries, the application of various exercises, of frictions, and of unctions, and in other instances. The history of medicine likewise shews us, how the revolutions of time bring back really the same fanciful hypotheses, which only by a change of terms have been repeatedly obtruded on the world.

Although the progress of medicine, since the age of Hippocrates, has indeed been slow, considering the number and abilities of its professors, yet it has made considerable advancement since that time. The history of physic shews how it has been gradually improved by accidental discoveries, by the rash attempts of empirics, by the accurate and faithful observations of sagacious physicians, and by the sober and diffident reasonings of men of true medical and philosophical genius. Nor should it be thought, that even the most fanciful hypotheses that have prevailed in physic have been entirely useless. The zeal of supporting a theory, however false, has given rise to some important experiments. Enthusiastic chemists, who boasted of a command over nature, and trusted to the efficacy of their own medicines, have sometimes performed surprising cures, and by such remedies as no physician would have ventured on. On the other hand, Stahl and his followers, who trusted almost every thing to Nature, have advanced the art by their diligent attention to the history of diseases, and to the operations of Nature in performing the cure.

I am at a loss what advice to give you in relation to the study of mathematics, because I distrust my own judgment on this subject. I am afraid I am partial to a subject to which I had a kind of innate and hereditary attachment, and which was the business and pleasure of my early days. An acquaintance, at least, with the elements of this science is certainly necessary, if we would make any progress in natural philosophy; and I have already shewn how intimately that science is connected with a thorough knowledge of the animal oeconomy. The application of mathematics to medicine, towards the end of the last century and the beginning of the present, was productive of some good consequences. Among others, it contributed to banish the false hypotheses of the Galenical and chemical sects, and that scholastic jargon which had involved physic in unmeaning verbal altercations. It introduced a more liberal spirit of inquiry into every branch of medicine; a greater attention to experiments and observations, and a greater degree of clearness and precision in medical reasoning. I acknowledge, however, that this study has often been abused. Many of the mathematical physicians were unfortunately persuaded that all the phenomena of the animal oeconomy were explicable on mechanical principles alone: But the impossibility of applying these upon some occasions, and the too hasty application of them upon others, often led to very false conclusions. Indeed, any person accustomed to the accuracy, perspicuity, and elegance of geometrical reasoning, must see with some indignation the parade of mathematical language, and the prostitution of the word *demonstration*, so frequently misapplied. From what I have said, you may perceive that I do not recommend the study of mathematics as leading directly to any important discoveries in medicine, but from a persuasion that, besides its subserviency to natural philosophy, it has a tendency to quicken the invention, to open the mind, and to accustom it to a habit of close and accurate reasoning. But let me caution you against entering too deeply into this most bewitching of all studies, which will probably divert your attention from the main ends of your profession. Let me also desire you to guard against its leading you to a disposition to scepticism, and suspense of judgment in subjects that do not admit of mathematical evidence. Remember that habits of nice discrimination, though frequently useful, are sometimes incompatible with the business of common life, and of your own profession.

I hope I have no need to recommend to you a thorough acquaintance with the Latin tongue. A physician's reading must be confined within very narrow bounds, who is unacquainted with what has been the universal language of the learned in Europe for so many ages, and which serves to communicate their sentiments, from one nation to another, so easily and so quickly.

The interests of learning will very soon suffer by its disuse, and by the present mode of authors writing in their own native language. But I must here take notice of an error, into which they who value themselves on their knowledge of Latin are apt to fall, and which has contributed, more than any thing, to this growing evil. What I mean is, too great anxiety about classical purity, and elegance of expression. The intention of language is to convey our thoughts with clearness, force, and precision. If this can be in a style truly classical, it is a great additional beauty; but, from the numerous improvements made by the moderns in all the arts and sciences, there have arisen many ideas and objects, which the Roman classics could have no expression for, because they did not know them. An author, therefore, who has occasion to express these ideas, is under a necessity of latinizing words in his native language, in order to express his meaning, or of adopting Latin words used only by authors of inferior note. If he is determined to use no phrase but what is strictly classical, he must, on many occasions, either suppress what he wished to say, or he must lose much more than he gains by elegance of diction, in the more substantial points of energy, precision, and perspicuity. We have the peculiar advantage in our profession of having in Celsus a standard for purity and elegance of medical Latin; but there are still a variety of medical ideas, arising from the improvements in the science, to be expressed, which neither Celsus, nor any Roman writer, could be possessed of.

I must here recommend to you the study of that copious, expressive, and harmonious language, the Greek, in which some of our oldest, and some of our best authors have written; particularly Hippocrates, the father and founder of medicine. Almost all the medical terms of art are Grecian; a knowledge, therefore, of that language, must evidently facilitate your progress in the profession. Besides, it is unbecoming a physician who pretends to a liberal education.

education, to be in the daily use of terms to whose original he is a stranger.

The necessity of a knowledge of the French is apparent. Almost all the authors of that nation, many of whom are very valuable, write in their own language; it is likewise become so universal in Europe, that every gentleman who travels must necessarily make himself master of it.

It may appear at first view superfluous to recommend an attention to your own language. But it is well known that many physicians, of real merit, have exposed themselves to ridicule by their ignorance of, or inattention to, composition. It might be expected that every one, who has had the education of a gentleman, should write his native language, with at least grammatical exactness; but, even in this respect, many of our writers are shamefully deficient. Elegance is difficult to attain; and, without great taste, dangerous to attempt. What we principally require in medical writings, is perspicuity, precision, simplicity, and method.

A flowery and highly ornamented style in these subjects is entirely out of its place; and creates a just suspicion, that an author is rather writing from his imagination, than copying from Nature. We have many bulky volumes in medicine, which would be reduced to a very small compass, were they stripped of their useless prefaces, apologies, quotations, and other superfluities, and confined to the few facts they contain, and to close inductive reasoning.—What I would principally recommend to you in every species of medical writing, next to a simple and candid history of facts, is a strict attention to method. I am no admirer of that display of system and arrangement, so remarkable in some writers, who split their subjects into endless divisions. This may strike a young reader, not accustomed to such kind of writing, with an high opinion of the author's ingenuity and accuracy; but in general it is a mere deceit. It is a mode of writing easily attained; and was in the highest perfection, when the scholastic logic, which consisted rather of nominal than real distinctions, was held in admiration.

I must however observe, that the composition of a book of science, intended only for the perusal of our own faculty, and that of one addressed to the public in general, upon a subject in which they are particularly interested, and which they are capable of understanding, may, and ought to be, different. In the first, the qualities I just now mentioned are alone necessary. The intention here is only to investigate truth, to communicate discoveries, to relate new facts, or to exhibit those already known in new lights and combinations. The book is addressed to men who must be supposed willing and ready to give it a fair and impartial review. But in a medical work addressed to the people, the design may be to make them not only think rightly, but act properly; not so much to instruct as to reform. It must therefore be written in such an agreeable manner as may entice them to read it. Not only must the subject be stript, as much as possible, of all technical terms, and made perfectly level to their capacities ; but the author may be allowed to paint the truths it contains in lively colours, and in such a manner as to warm the imagination, and interest the feelings. Without this, a few speculative men may afford it a cold approbation ; but the book will not be generally or well received. Its merits, in regard to the facts it contains, and the justness of the reasoning from those facts, can perhaps be properly decided only by the faculty : Its merits as a composition must be estimated by the public approbation, and the good effects it produces.

It would require too much time to enumerate all the qualifications that might be deemed ornamental to a physician. In general, there is no reason why he should be excluded from any amusement, or any accomplishment, that becomes a gentleman. On the contrary, these give an agreeable relaxation from the severer studies and fatigues of his profession ; they render his conversation more cheerful and entertaining ;

taining; and, instead of that aukward pedantry, by which modern men of learning have sometimes been distinguished, they diffuse an ingenuous and liberal air over his whole behaviour.

LECTURE IV.

GENERAL views and principles to be attended to in the investigation of Nature.—Advantages attending the study of Nature—favourable to religion.—Natural history of man; what it includes.—Every event in Nature happens in consequence of general laws.—These laws how ascertained.—Original principle of belief in mankind.—Experience how attained.—Evidence of our senses sometimes fallacious, sometimes deficient.—Consequences of trusting to a limited experience.—Reasoning by analogy—deducing general principles by induction from particular facts.—Errors we are led into by our impatience to ascertain these principles.—Deception from imaginary analogies.—Advantages of philosophical diffidence.—Necessity of reasoning and of establishing general principles, particularly in medicine.—State of the controversy between the Empirics and Dogmatists.

LECTURE IV.

THE works of Nature are of infinite extent and variety; but amidst all this variety, there is, as I have already remarked, such an intimate connection, that no one part can be thoroughly understood by studying it entirely detached from the rest. In our inquiries into the various branches of the works of Nature, there are certain general views, and certain general principles of investigation, to be particularly attended to. The general views to be attended to, in the study of Nature, respect, 1. The advantages it brings to individuals. 2. Public utility.

1. The advantages to individuals that attend inquiries into Nature, are sufficiently obvious. These inquiries give exercise to many of the active powers of the mind; they gratify curiosity, the love of truth, and of whatever is great, beautiful, or wonderful: principles deeply implanted in human nature.

2. In regard to public utility, they promote all the useful and elegant arts; all the arts that tend to the happiness and ornament of human life. A profound knowledge of Nature extinguishes pride and self-conceit, by rendering men more deeply sensible of their ignorance, their errors, and the very limited state of their faculties. It is favourable to the interests of religion, by exhibiting the most striking proofs of the infinite wisdom, power, and goodness of the Supreme Being, who supports this wonderful frame of things, by laws often, indeed, unsearchable in their nature, by human wisdom, but steady and uniform in their operation, and admirably fitted to promote the happiness of his creatures. Such a knowledge must impress every

heart endued with the least portion of sensibility, or not strangely perverted, with that awful veneration, that love and gratitude to the Divinity, that submission to his providence, and that reliance on his goodness, which alone constitute true devotion. It has been imagined by some, that very extensive knowledge leads to Atheism; but there is not the least ground for such a suspicion. A little learning is, indeed, a dangerous thing, to a weak and conceited man, who, from a superficial acquaintance with second causes, is apt to overlook the First and Great Cause. But to a sound understanding, extensive knowledge is the truest teacher of humility; it shews how often men are deceived in their supposed acquaintance with second causes; and that, even where many of these are clearly ascertained, yet, in tracing the chain that connects them, the most acute and profound genius must stop some where, and at last refer them to a supreme intelligent First Mover. While we attempt, however, to clear philosophy from the charge of impiety, a very important distinction must be attended to. I will venture to maintain, that those philosophers have been the firmest supporters of religion, who have employed their genius and application in the investigation of the works of Nature, and whose views in science have been grand and extensive. Among a multitude of examples I could bring to prove this assertion, I shall mention only three of our own countrymen, Lord Bacon, Mr Boyle, and Sir Isaac Newton. Those philosophers, on the other hand, who have been the most distinguished propagators of Atheism, have been men not much acquainted with the works of Nature, who searched for truth in their own little minds, not in the great world without them[*]; men who, in regard to science and the useful arts, have either neglected them altogether, instead of promoting them by observation and experiments; or corrupted them by metaphysical subtleties, often indeed ingenious and plausible, but which have never led to any useful discoveries or improvements.

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[*] Bacon.

The system of principles merely hypothetical, fabricated by these men, and sometimes supported with much subtlety and some fancy, with a view to disprove the evidence of a Divine Providence, of the immateriality of the soul, and of a future state of existence, shews a wonderful perversion of the human mind. Surely, if we ever choose to soar into the regions of Fancy, it should be from a desire to amuse, to mend the heart, to warm the imagination with pleasing prospects of the dignity of human nature, of Providence, and of futurity; and not with a view to degrade our nature, to infuse suspicions upon the most interesting subjects, and to throw a damp upon every heart possessed of the common feelings of humanity.

There is no branch of natural knowledge so useful or interesting, as that which relates to the human species; which is evident, when we consider that it includes,

1. Medicine, or the art of preserving health, of prolonging life, of curing diseases, and of making death easy.

2. The arts of improving the different faculties of the human body; as strength and agility: rendering us superior to pain, cold, hunger, and the many other evils, to which mankind are subjected.

3. The preservation and improvement of beauty.

4. The laws of union between the mind and body, and the mutual influence they have upon one another. This is one of the most important inquiries that ever engaged the attention of mankind, and almost equally necessary in the sciences of morals and of medicine. This last comprehends,

(a) The doctrine of the preservation and improvement of the different senses, external and internal, the memory, imagination, affections, and judgment.

(b) The history of the power and influence of the imagination, not only upon the mind and body of the imaginant, but upon those of other people.

(c) The history of the several species of enthusiasm.

(d) The history of the various circumstances in parents, that have an influence on conception, and the constitution and character of their children.

(e) The history of dreams, with a view to our acquiring a power over them.

(f) The history of the power and laws of custom and habit.

(g) The history of the effects of music, and of such other things as operate upon the mind and body, in consequence of impressions made on the senses.

(h) The history of natural signs and language, comprehending the doctrine of physiognomy and outward gesture.

(i) History of the power and laws of the principle of imitation*.

I mention these heads only as a specimen, and not as a full enumeration of the many important articles contained under the natural history of the human species. I mention them as examples of the general views to be regarded in our investigation of Nature, and essentially connected with the science of Medicine, but have taken no notice of the inquiries that relate to man in his moral, political, or religious capacity, as being foreign to my profession.

I proceed now to lay down certain general principles, which require our attention in the investigation of Nature, and shall endeavour to apply them more particularly to the science of medicine. When we look around us, we find objects connected together, in a certain invariable order, and succeeding one another in a regular train. It is by observation and experience alone, that we come to discover this established order and regular succession in the works of Nature. We have all the evidence which the nature of the thing admits of, to persuade us that nothing happens by chance; nay, we have every reason to believe, that all events happen in consequence of an established and invariable law; and that, in cases similar, the same events will uniformly take place.

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* Bacon.

Here I must observe, that, antecedent to all reasoning and experience, there is an original principle implanted in the human mind, whereby it is led to a belief that the course of nature is regular. In consequence of this principle, whenever a child sees any event succeeding another, he has an instinctive persuasion, that the same event will succeed it afterwards in the same circumstances. This persuasion does not flow from any connection he sees between the cause and the effect, nor from experience, nor from reasoning of any kind. So ardently do we desire to find every thing that happens within our observation, thus connected with something else, as its cause or occasion, that we are apt to imagine connections upon the slightest grounds; and this weakness is most remarkable among the ignorant, who know least of the real connections established in Nature.—Credulity seems likewise to be an original instinctive principle, by which we are disposed to believe, prior to experience, not only the language of natural signs, but also the language of artificial signs, as soon as they come to be understood. Hence the credulity so remarkable in children. They at first believe every thing that is told them to be true; and it is experience alone which teaches them to restrain this natural propensity. Dr Reid has treated this subject with great acuteness, in his ingenious Enquiry into the human mind.

We obtain experience, either by the evidence of our own senses, or by the testimony of others.

1. The testimony of our senes, though generally considered as one of the highest degrees of evidence, is often fallacious, and often defective. The sensations excited in us, in consequence of impressions made on our organs of sense, depend on the following circumstances:

On the state of the medium through which the communication between the objects and the organs of sensation is made, e. g. the state of the air, when we judge of visible objects.

On the state of the organs of sensation themselves, every one of which may be vitiated in a variety of ways.

Our unassisted senses often fail us on account of the subtlety or minuteness of bodies, too quick or too slow motion, the object being too common, and many other causes.

Although the impression is properly made on organs that are in their sound state, yet the ideas conveyed thence to the mind may be so varied and modified by the imagination, as entirely to mislead the judgment. Thus every part of natural history, and medicine above all others, is crowded with facts attested by eye-witnesses, of supposed veracity; which facts, notwithstanding, had never any existence but in their own imaginations.

From a failure likewise of memory, and from imagination assuming its place, we believe upon the supposed evidence of our senses, although in fact we never had such evidence. We likewise often mistake an opinion, or an inference of the understanding, for a fact established by the evidence of sense; for example, when we judge of the real magnitude of objects by their appearance. But although, in some particular circumstances, our senses may be fallacious or deficient, yet we are led, by an irresistible instinct in our nature, to trust to them. All experimental knowledge proceeds upon this principle; nor can we make one step in life without it. The very methods we use to discover the fallacies and deficiencies of our senses, presuppose such a necessity to yield to their evidence, because the appeal must always be made to this evidence.

2. The experience which we trust to from the testimony of others, is liable to the same imperfections with our own, and often to the additional inconvenience of our uncertainty with regard to the accuracy or veracity of our authors.

Having examined the sources of experience, I shall now proceed to consider the manner in which mankind agree in applying it. I have already remarked, that men naturally believe, that what they have seen to happen in one case, will happen again in the same circumstances; and that the same causes will always produce the same effects. This is equally true, both with regard to the philosopher and the peasant. The only difference between these two consists in this; the peasant concludes two cases to be precisely alike, because they resemble one another in their obvious appearances; the philosopher, on the other hand, from a more enlarged experience, and more accurate observation, does not so easily trust to appearances; he is aware of the various sources of deception, and therefore examines every minute and latent circumstance, before he ventures to form a judgment; and the difficulty of ascertaining, with precision, the exact similarity of cases, makes the true philosopher extremely sceptical in drawing conclusions of what will happen, from what has happened. An African, who has seen water in a variety of circumstances, but still retaining its fluidity, concludes, that fluidity is essential to water, and will not believe travellers when he is told, that, in certain parts of the world, water often appears in a solid form. His mistake does not proceed from trusting to experience, but from thinking he had sufficient experience, when in reality he had it not. All that he could justly infer from his experience was, that water, in all the circumstances under which he had seen it, would remain fluid. But water exposed to a degree of cold sufficient to congeal it, was a circumstance in which he never saw it; therefore his experience could never tell him, what effect that cold would have upon the fluid, whenever it came to be exposed to it.

Although facts afford the only solid foundation for genuine science, yet, when we consider them as unconnected with other facts, they convey but little instruction. The phenomena of Nature are infinite; but the capacities of the human mind, and particularly the memory, are limited. If these phenomena, therefore, were not reducible to certain general principles or laws, our experience of particular facts could do us but little service. But there is a strong propensity in the mind to be delighted with analogies, to compare and connect facts that resemble one another, and, by this comparison, to reduce them to certain general principles, to apply such general principles to account for other effects, or to direct us in the production of them. The business of true philosophy is, to avail itself of this natural propensity, to discover these connections, and reduce them under certain general rules or principles, called *laws of Nature*. Our inclination to reduce particular facts to general laws appears from the anxiety which men shew to discover the cause of any uncommon event. The discovery of this cause infers no more, than the finding out that law of Nature by which the event is produced. In our inquiries into Nature, after we have arrived at the knowledge of some general laws, by an accurate comparison and arrangement of observations, we may, by comparing these laws together, discover laws still more general; and thus, by a slow and cautious induction, we may advance to a knowledge of the most general laws that regulate the system of Nature. But many obstacles concur to prevent the establishment of philosophy upon this solid foundation; some of which I shall endeavour to explain.

1. The* impatience of men to reduce all knowledge, and to refer all events, to certain general laws, makes them unwilling to submit to a slow, but sure, method of investigation. They attempt a shorter way of discovering those laws, in which they are misled, either by a false reasoning from imaginary analogies, or by supposing the laws of Nature to be fewer and

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* Bacon de Augmentis Scientiarum.

simpler than they really are. The consequences of which are, the hasty reduction of the sciences into imperfect and erroneous systems.

2. The pleasure that men have in discovering analogies, makes them often imagine resemblances between things, where in truth there are none, or none of any consequence. Arguments from analogy very readily present themselves to a warm imagination, while more direct and conclusive arguments, drawn from observation and experiments, often require painful attention and application; though, after all, they may prove insufficient to establish the wished-for principle. I shall readily acknowledge the usefulness of analogies; they often facilitate the conception of things, which, without their assistance, could not easily be comprehended. It is likewise by reasoning from analogies, that we are sometimes led to anticipate many useful principles and discoveries. But we ought never to acquiesce in analogies, when we can obtain more direct evidence; as

all that analogies can lead to, are but probable conjectures, commonly called Theories.

3. There is a certain intoxication usually attending the supposed discovery of general principles in science, or of useful inventions in the arts, which renders men of warm imaginations blind to every difficulty that lies in their way, and often induces them even to suppress such difficulties. The concealment of facts that contradict a favourite hypothesis, is not always owing to want of candour. Sometimes the author does not mention them, because he does not see them; sometimes he disregards them; and sometimes he conceals them, from the fear of creating a prejudice against what he thinks an important discovery. Every true philosopher, however, will be particularly diffident of himself in this respect; and whenever he gets a glimpse of a theory, will immediately set his invention at work to contrive every experiment that can produce a direct evidence either of its truth or falsity.

This philosophical diffidence is so far from discouraging, that it greatly promotes the investigation of causes and general laws. A state of suspense is always disagreeable; and the uneasiness it gives becomes a powerful incitement to such further inquiries as may remove it. A zealous attachment to theories may not only lead into dangerous mistakes, but, by betraying men into a false security, cut off every motive to further inquiry. It is not a true philosophical scepticism, nor a low opinion of our present knowledge, which checks the spirit of inquiry into the laws of Nature; it is a mean opinion of the human powers, which effectually chills the ardour of genius, and blasts all grand and extensive views of improvement.

In works addressed to the heart, that coldness and severe precision, so necessary in the investigation of truth, have no place: imagination there is in her proper element, and the loosest and wildest analogies may be often admitted with propriety. A philosopher may read a fairy tale with great delight, without giving the least ground for calling in question his taste or understanding; but it reflects severely upon both, if he reads with the same pleasure a philosophical investigation, not founded in observations and experiments, but in the vagaries of a lively imagination; unless he is senible of its being a romance, and only allows himself to be charmed with the spirit or elegance of the composition.

4. There is, in matters of this kind, a species of self-deceit, which deserves particular notice. We often find those people inveighing bitterly against theories and hypotheses in philosophy, who are themselves (perhaps without knowing it) notoriously addicted to them. This is remarkably the case with medical writers, who commonly decry all reasoning and principles in physic, which differ from their own, as idle theory; and frequently declaim against theory, in such a way as might seem to condemn all reasoning and investigation of causes and principles, as useless and delusive. But it should be considered that we cannot advance a step in the pursuit of knowledge, without reasoning.

soning. In every useful experiment, and especially in conducting a train of experiments, we must employ our reason; there must be some point in view, some anticipation of a principle to be established or rejected; and reason must determine all the circumstances to be attended to in making every observation, or experiment, with a view to discover the truth. Without reasoning, or without trusting to certain principles, either established or rendered probable, we could never be benefited by experience, because we could never transfer it from the case we have seen to the case immediately before us. For instance, I have a patient in an intermitting fever, which I propose to cure by the Bark. I shall suppose I have cured five hundred patients by this medicine formerly; but yet I know I never cured one whose condition, in respect of age, temperament, and other particulars, exactly corresponded with that of my patient. If, therefore, I give this medicine, I must reason upon this principle, that the Bark will universally cure this disease, notwithstanding some difference of circumstances. But this is a principle of which I have no direct and conclusive knowledge, but one which I have adopted by a probable reasoning from analogy: and, in reality, it is not universally true, though physicians must proceed upon it in their practice, till future observation shall ascertain the exceptions to it. Boerhaave, Hoffman, Stahl, and other systematic writers, exclaim against theories, meaning one another's theories; for each of them explain, though in a different, and often opposite, manner, the proximate cause of every disease they treat of, and the mode of operation of every remedy they prescribe, upon principles too hypothetical. Even Sydenham, though reputed a purely practical writer, is full of hypothetical reasoning; which, however, had not the usual effect of making him less attentive to observation; and, indeed, his hypotheses seem to have sat so loosely about him, that either they did not influence his practice at all, or he could easily abandon them whenever they would not bend to his experience.

It should seem, upon the whole, that all physicians must reason; and that the only difference among them consists in this, that some reason better than others. Some, for example, search into the causes of diseases, and the effects of remedies. Deeply sensible of the difficulty of the inquiry, and the various ways in which they may be deceived, they collect and arrange all the facts relating to the subject; when they have got a remote view of a leading principle, they attempt, by experiment, to bring a direct and conclusive proof of its existence. If the proof turns out against it, they see, and candidly acknowledge, their mistake; if the case does not admit of a direct proof, they consider their principle as only more or less probable, but never relinquish the pursuit. These, I think, have a just claim to the title of *rational physicians*. Others, upon the foundation of a few facts and vague analogies, form hypothetical principles; a creative imagination supplies materials, where they seem wanting; they employ their ingenuity to strain facts into a correspondence with their theories; and such as will not bend to their purpose they reject, under pretence of their being false or incredible. In practice, they neglect particular observations; because they think their general principles so well established, as to want no confirmation. Such men assume the title of rational physicians. But surely every system-builder, who has classed himself among the rationalists, cannot have a claim to this title; because many of their systems are different and contradictory.

But from the days of Serapion, founder of the empirics, to the present time, there has been constantly a division of physicians into two sects, one pretending the strictest regard to observation and experience, but stigmatized by their opponents as quacks; the other assuming the name of rational or dogmatical physicians, but accused of being contemners of experience, and of being attached to imaginary hypotheses either wholly inapplicable to practice, or corrupting it with errors. This division appears to me to have essentially hurt the interests of medicine;

dicine; and as many students are apt to enlist themselves on the one side or the other, who can have no just idea of the nature of the dispute, I shall endeavour to lay it open to its source, and shew how much men have been deceived and perplexed on this subject by the ambiguity of language. But it may be proper to premise a general view of the state of medicine before this controversy existed.

There are no traces of any regular system of medicine before the days of Hippocrates. The practice before his time seems to have been merely empirical; that is, founded on real or imaginary experience of the effects of remedies in particular diseases, but without any proper regard to their symptoms or causes. It was besides, as appears by the earliest accounts we have of it in Ægypt, confined to the priests: which was generally the case among the most ancient nations. Those priests concealed it as a mystery, interwove it with their religious superstitions, and exercised it with much artifice. Other inconveniences arose from the science being, for many ages, confined to a particular family in Greece, the descendants of Æsculapius.

It is evident that philosophers, who were not of this family, and who began to study medicine as a useful branch of natural philosophy, were the first who introduced into it a more enlarged spirit of observation and reasoning. The most distinguished of these was Pythagoras; who, with a penetrating genius, inquired with unbounded curiosity, into every part of nature. His warm imagination led him to a belief in genii, in magic, in visionary harmonies and powers of numbers; that tinctured all his philosophy, and consequently his physic, with which it was connected. Succeeding philosophers further corrupted medicine, by distorting every branch of it with the most chimerical hypotheses.

In this condition it was found by Hippocrates. His sagacity discovered to him the necessity of correcting these abuses; and he set about new-modelling the art, and placing it upon the sure basis of observation. Hence he is said to be the first who separated the study of medicine from that of philosophy. But, as he likewise endeavoured to establish general principles from particular observations, he is considered as the father of the rational or dogmatical system. It appears, however, from his works, that some part of the prevailing philosophy, and even of the superstition of the times, still adhered to him; but, on the whole, his reasoning is more just than could be expected, considering the then low state of anatomy, and other sciences connected with medicine.

For some centuries after Hippocrates, medicine seems to have made no progress. Two of the greatest men of antiquity, Plato and Aristotle, concurred, though in different ways, to check its improvement, not only during that period, but almost down to our times.

Plato, whose writings are distinguished by the purest Attic elegance, will always be considered as one of the fathers of polite literature. But to view him as a natural philosopher, he must be accounted a corrupter of almost every branch of it, and particularly of medicine. In his Timaeus, he has given a specimen of his sentiments relating to the animal oeconomy, which are the mere effusions of a heated imagination. The sublimity of his genius, which attempted to grasp the whole creation, and his irresistible eloquence, captivated all succeeding philosophers whose imagination was superior to their judgment, by withdrawing their attention from the study of nature under the specious name of Contemplation. Hence it is that many of his wildest theological ideas have been introduced into our systems of physic, as well as into those of divinity.

Aristotle possessed a most acute and comprehensive genius. His writings, in many branches of knowledge, are deservedly held in the highest esteem, both for ingenuity and soundness of reasoning. But I am only to speak of such of his works as relate to natural philosophy and medicine. The writings of this philosopher, though he does not treat professedly of medicine, have had a more extensive influence over it than those of any physician whatever. His philosophical principles were similar to those of Plato, were hypothetical and visionary, but supported with more plausible arguments, and founded on a more extensive knowledge of Nature. As his principles were adopted by Galen, almost all the systems of physic, till those of the last century, were more or less derived from them. But the prejudice he has done to physic has not so much arisen from his introducing into it false principles, because time must have discovered this abuse ; it has arisen from his having corrupted the true spirit of philosophical investigation. Under pretence of teaching men to reason with clearness and precision, Aristotle, or perhaps rather his followers the school-men, stopped the progress of useful knowledge, by diverting the attention from experience and observation, and engaging it in the pursuit of useless subtleties, which professed to penetrate into the deepest recesses of Nature, but in reality ended in nothing but useless jargon.

Different modifications of the doctrines of Plato and Aristotle, and of some others which time has buried in oblivion, confounded medicine with many absurdities, and involved it in disputes with which it had no concern. In this situation, it was found by Serapion, who maintained that this philosophy was foreign to the art of medicine, the practice of which he confined to experience alone. He deemed it unnecessary to inquire into any causes of diseases, but such as were evident, and therefore rejected anatomy, the dissection of morbid bodies, and all inquiries into the remote and latent causes of them. However absurd such a conduct would justly appear to us in the present improved state of medical knowledge, in those days it was plausible. Physicians were then ignorant of every branch of natural philosophy connected with their profession, as well as of anatomy, physiology, and chemistry. If they had been sensible of their ignorance in these matters, their reasoning might have been defective, but it would not have been erroneous, because it would have stopped whenever they wanted facts upon which they could proceed. But this has seldom been the practice of philosophers or physicians in any age: wherever observations have failed, fancy has always supplied their place; so that materials have never been wanting to establish, for a time, any hypothesis whatever. I shall mention, as a specimen of the medical philosophy of ancient times, the following doctrine from Plato.

The first form which the elementary particles of matter received, was believed to be triangular. From the different sizes and positions of these triangles, were produced the four elements, fire, air, water, and earth. Fevers were thus accounted for. If the fire exceeded, continued and ardent fevers were produced; if air, quotidian intermittents; if water, tertians; if earth, quartans. A method of cure in these diseases was laid down, supposed to be correspondent to the proximate causes just mentioned, and, in many respects, fully as absurd. It is a lesson of humility to find, that the human understanding, in a most enlightened nation, among men of the most distinguished genius, could be weak enough to embrace such chimeras for truths.

Serapion had several followers among the ancients eminent for their abilities, who were distinguished by the name of *Empirics;* but there have been so few among the moderns who had any pretensions to learning or genius, that have openly professed themselves of this sect, that the name of Empiric is now used as a term of reproach, and only applied to illiterate quacks. But, though all physicians, regularly educated, disclaim the name of Empiric, yet, in effect, the ancient distinction between empirics and dogmatists is continued, in other terms, even to the present times. But it appears to me, that both parties have been to blame, not only in regard to their conduct as physicians, but in the loose manner in which they have carried on the dispute. In order to prove this, I shall endeavour to settle the meaning of some words that often occur in this controversy, the ambiguity of which tends to perpetuate it.

An *empiric* properly signifies a physician who regards experience, and who is directed by it in his practice. In this sense it is creditable to be an empiric.—Experience is surely the foundation of all knowledge in physic; the ultimate appeal must be made to it; and whatever assertion contradicts experience or facts, ought to be rejected as false. The appellation *Empiric*, however, is generally applied to one who, from observing the effects of a remedy in one case of a disease, applies it to all the various cases of that distemper. But the names given to diseases are in reality names annexed to a certain number of symptoms, rarely exceeding three or four. The same name therefore is given to all cases where these symptoms occur; or, in other words, these cases are referred to the same genus of diseases, although, in many other respects, they are very different, and require a different treatment. Thus, under the genus of small-pox, are comprehended several species, varying more from one another than an inflammation of the lungs from a rheumatism. There can therefore be no universal medicine for every case of the small-pox, or indeed for any other disease; because, though they may agree in the few symptoms which give the name, yet they may differ in regard to others of more consequence. The application of a remedy in a disease must likewise be regulated by the various remote and proximate causes producing it, by the constitution of the patient, by his age and habit, by the season of the year, the climate, and other circumstances.

These truths are so well known to every person in the least acquainted with physic, and one should imagine are so obvious to common sense, that it is surprising how any man could be so ignorant or impudent as to recommend an universal specific for any one disease, and equally surprising how any man, even of the lowest understanding, should give the least credit to such an assertion.

From what I have said, it appears that empirics, notwithstanding their pretensions of relying upon experience alone, have in truth abandoned it.

There is an experience indeed, which, however extensive, does not render a physician more sagacious, or more successful in his practice, because it is not attended with the necessary observation. Some set out with a belief in the infallibility of certain principles, and of remedies resulting from those principles, in the cure of diseases. These they are sure to apply, as soon as they have fixed the name of a disease. They give no attention to the distinction to be made between the cases, in which their remedies have, and those in which they have not succeeded; they never vary their practice, nor listen to any proposed improvement; and consequently cannot profit by any new discoveries.

The fate of medicine and that of agriculture have in this respect been similar. Within these last thirty years, more real knowledge has been acquired in these two sciences, and more facts ascertained, than in many preceding centuries; while at the same time the uncertainty, and even falsity, of many of their principles have been demonstrated. Yet, what has been done serves principally to shew physicians and farmers how much they have been hitherto deceived, in their supposed experience; and to give them some idea of the extent and difficulty of their several professions.

From the manner in which empirics in all ages have conducted themselves, it is not surprising that their writings have tended so little to the advancement of the art; and that, on the contrary, they have had the greatest share in encumbering it with the many falsehoods, under which it has laboured so long; particularly that important branch of it which relates to the effects of medicines. It has been pretended that such empirical books, as I have alluded to, may be useful to those who are not bred to the profession, and who wish only to acquire some knowledge of the practical part of physic. But this is so far from being the case, that these are the only people to whom such books can be dangerous. A physician of real knowledge and practice may draw instruction, or catch hints, from facts related in an imperfect manner, which will either be useless to others, who have not these advantages, or tend to mislead them. To such, all the circumstances relating to the exhibition of a remedy can never be too distinctly specified. I shall give an example in the case of one, which I shall suppose recommended as almost infallible in the cure of a head-ach. How many questions occur here?—In what kind of head-ach has it been found serviceable? Did the pain arise from any affection within the head itself; from a congestion of blood; from a collection of water; from an inflammation of the brain, or of its membranes; or did it proceed from a disorder in the alimentary canal; from acidity, from any putrid matter, or collection of viscid phlegm in the stomach? Was the head-ach attended with fever; and with what kind of fever? Was it the consequence of sudden exposure to cold or heat; or was it the effect of drunkenness, of wounds, or of other external violence; or of any strong affection of mind? A variety of other questions might be properly proposed in this example; and, unless these can be distinctly answered, the practice is defective. In many cases of a head-ach, the remedy could not be applied with any probability of success, and in others its application might be attended with danger. Happily for mankind, by far the greatest part of those medicines, which have been celebrated under the name of Specifics in particular diseases, are either so very insignificant in their nature, or at least so trifling in the doses in which they are administered, that they may be given with safety in any case whatever.

Having attempted to shew how little medicine has been benefited by the labours of the Empirics, I shall inquire how far its interests have been advanced by their opponents, who assume the name of Regular, Rational, or Dogmatical Physicians.

The term dogmatic, in its original sense, implied only one who endeavoured to reduce his knowledge

ledge of diseases to certain principles. It came afterwards to be adopted by physicians, who, from weakness and vanity, pretended to practice, from a knowledge of the proximate causes of all diseases, and of the mode of operation of all remedies. But now, in common language, the term Dogmatical is generally used in an unfavourable sense, being applied to one who is conceited, dictatorial, and obstinately attached to particular opinions.

The complaints against those who assume the character of rational and dogmatical physicians, have been too loud and too frequent to be entirely without foundation. They have been accused of neglecting observation; of withdrawing the attention from the useful and practical part of medicine; of engaging the mind in disquisitions foreign to the main ends of their profession; of corrupting every branch of medicine, by false reasoning and ill-founded hypotheses; and of disguising, suppressing, and even forging facts, in support of their visionary systems. I am sorry to say, that the history of medicine in all ages sufficiently justifies these charges; but at the same time it must be observed, that they have been carried to an extreme. Some people, not satisfied with railing at all hypotheses and theories, exclaim against all reasoning in physic, as manifestly tending to mislead us. But here we must endeavour to ascertain the meaning of some terms made use of in these complaints.

Reasoning properly signifies the exercise of that power of the mind by which it infers one thing from another, or deduces conclusions from premises. Without the exercise of this power, we could neither act in the common affairs of life, unless when impelled in particular cases by instinct, imagination, or passion; nor advance a step in the investigation of truth beyond self-evident principles. As then we must reason from the necessity of our nature, our business is only to take care that we reason justly. But false reasoning is not more common in physic than in law, in divinity, or in the common conduct of life; yet no one ever insinuated, that we ought to abandon the use of our reason in any of these subjects.

The chief objection to theory in physic proceeds from an ambiguity of words. The theory of a science properly signifies the doctrine of the general established principles of that science, and is distinguished from the practical art of applying those principles to the uses of life. Thus, for example, the theory of navigation does not consist of hypothetical principles, but of such as are established on solid and unquestionable foundations; and is distinct from the practice of navigation, which consists in the application of those principles with propriety and facility; an art to be acquired by habit and experience alone. There ought to be the same distinction between the theory and practice of physic; but, by a perversion of language, the theory of medicine is represented by some as a pretended science, consisting in reality of mere conjectures, and chimerical speculations. In consequence of this unfair representation, which I formerly endeavoured to refute, an unhappy opposition has been established between the theory and practice of physic, as if they were not only not essentially connected, but even at variance; as if the one was entirely a work of the imagination; the other the result of sagacious observation and experience: Whereas, in reality, theory, in the proper sense of the word, is produced by practice, is founded on facts alone, and constantly appeals to them for its truth. The prejudice which many people entertain against hypotheses in physic, is likewise founded on the equivocal signification of the word. It is commonly confounded with theory: but an hypothesis properly means the supposition of a principle, of whose existence there is no proof fro m experience, but which may be rendered more or less probable, by facts, which are neither numerous enough, nor adequate to infer its existence. When such hypotheses are proposed in the modest and diffident manner that becomes mere suppositions or conjectures, they are not only harmless, but even necessary in establishing a just theory in medicine. They are the first rudiments or anticipations of principles. Without these there could not be useful observation, nor experiment, nor arrangement; because there would be no motive, nor principle in the mind, to form them. Hypotheses then only become dangerous, and censurable, when they are imposed upon us for just principles; because, in that case, they put a stop to further inquiry, by leading the mind to acquiesce in principles which may as probably be ill as well founded. In this way, they have done great mischief in our science; but one of the chief advantages of a regular education, and of studying medicine on a systematic plan, arises from its rendering students more capable of distinguishing between real facts, and inferences of the mind mistaken for them; between a visionary hypothesis, and a just theory.

LECTURE V.

Error in supposing the laws of Nature to be fewer and simpler than they really are.—Natural dispositions of men influence their literary character.—Exemplified in those of lively and warm imaginations, and in those who are calm, sedate, and discriminating.—Bad consequences of a fondness for the marvellous.—Abuses in the study of natural history.—Causes that have retarded the advancement of the sciences.—1. Inattention to their end, viz. the convenience and happiness of life.—2. Useless subtlety which may be displayed in different ways—too scrupulous regard to arrangement.—Observations on the subject of arrangement.—3. Credulity.—4. Attachment to great names.—5. Blind admiration of antiquity.—6. Fondness of novelty.—7. Hasty reduction of the sciences into systems.—8. Too great attention to elegance of language, or an affected obscurity of style.—The study of Lord Bacon's writings recommended.

LECTURE

LECTURE V.

I OBSERVED before that, in our inquiries into nature, an impatience to acquire a knowledge of her laws, and a natural love of simplicity, lead us to think them fewer and simpler than they really are. The more we know, the more we discover the uniformity and simplicity of the laws of Nature, when compared with the vast extent and variety of her works; but still we must not imagine that they are confined within the narrow limits of our knowledge, or even perhaps

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ter. We commonly find those of a lively and warm imagination, most disposed to attend to analogies, in which fancy often deceives them. Upon these they are too apt to establish general principles, and to be so much attached to them, as not to see the objections to which they are exposed. If, however, by any accident, their opinion of their principles comes to be staggered, they too quickly relinquish them; while, perhaps, they may be in the main well founded, though embarrassed with some difficulties which a little more patience and perseverance might have conquered. To such men the world is sometimes indebted for useful discoveries: They are themselves often ruined by projects, from their neglect of some small circumstance necessary to their successful execution, which a man of inferior parts, afterwards observing, robs them both of the honour and profit of their inventions. I shall farther observe, that this vivacity of genius is generally attended with an impatience, that renders men incapable of a proper attention to facts and experiments, and prevents their bringing any work to a conclusion.

There is a species of genius the reverse of the former, calm, sedate, and attentive to the difference of things seemingly alike; that watches the operations of more lively and inventive spirits, and too often exposes their mistakes to ridicule. There are, in truth, so few men of original genius who strike out new paths in arts and sciences, that they should meet with every encouragement, particularly when they propose their opinions with modesty. Men, who go often out of the common road, must sometimes go astray; but, as they now and then make important discoveries, their errors ought to meet with indulgence. These two characters are sometimes united in the same person in different degrees. One may possess that warm and lively imagination, so peculiarly fitted for invention, and, at the same time, a clear, accurate, and sound judgment, that candidly considers every objection to his proposed plans; and, according to the weight of evidence, of our comprehension. When, by an extraordinary effort of genius, Sir Isaac Newton discovered that all the planets gravitate towards the sun, by the same law by which bodies on the earth gravitate towards its center, many phenomena, of whose causes we were till then ignorant, were explained by this simple principle. But it soon came to be misapplied to the explication of other phenomena, which were afterwards found to depend upon very different laws*. Des Cartes founded his system of the material world upon two principles, the existence of matter, and a certain quantity of motion originally impressed upon it. These, however, were found insufficient; and it has been made evident that we must also admit the principle of gravitation just mentioned, cohesion, corpuscular attraction, magnetism, electricity, and other powers, by which the particles of matter attract, and repel, each other. Even Sir Isaac himself was led by analogy, and the love of simplicity, to conjecture, but with singular modesty and caution, that all the phenomena of the material world depended upon attracting and repelling powers in the particles of matter. But we have now reason to believe that he was deceived: for, even in the unorganised kingdom, the powers by which salts, crystals, spars, and many other bodies, concrete into regular forms, can never be accounted for by attraction and repulsion in the particles of matter; and in the vegetable and animal kingdoms, there are evident indications of powers of a different nature from those of unorganised bodies. We are conscious of an internal principle, which feels, which thinks, and which seems to be the origin of animal motions. We are, in a great measure, ignorant of its nature; but we know that it has laws peculiar to itself, and that, in consequence of its union with the body, certain effects are produced, which the laws of matter are not sufficient to explain.

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* Dr Reid's Inquiry into the Human Mind.

We may here observe how the different dispositions of men influence their literary characdence; can either reject them altogether, or preserve his mind in a proper degree of suspense, till their real merit is ascertained. This happy union of genius and understanding, which we so rarely see, constitutes a philosopher of the first rank and dignity.

In collecting a natural history, subservient to the arts, and to become the foundation of an useful natural philosophy, it is necessary to make a selection of facts, among the infinite number with which Nature presents us. Our views should be confined to those which, being compared and arranged, may lead to general principles. The history, therefore, of any monstrous production, which has nothing similar to it, serves only to gratify curiosity. Yet this principle of curiosity, and love of the marvellous, is so prevalent among mankind, that all the *lusus naturae* are what principally attract their regard. If an animal comes into the world with two heads, we have presently a minute description of the monster published all over Europe, though it is not a matter of the least consequence to the advancement of science. This love of the marvellous is conspicuous in some medical writers. We find them full of extraordinary cases, such as have nothing similar to them, such as never happened before, and consequently such as will probably never happen again, described with a tiresome minuteness; while the symptoms that distinguish some common diseases from others of a different nature, which resemble them, are far from being yet ascertained. I do not mean here to object to the recording of every extraordinary event, as some of them may tend to throw light on the laws of Nature, in her ordinary course of proceeding. I only mean to censure this extravagant attachment to prodigies, when it leads us to neglect inquiries of more general utility.

The present fashionable taste for natural history, regards it more as an object of curiosity, than as the basis of a sound philosophy, subservient to medicine, agriculture, and the other useful arts. Every natural production is not only tediously described, but accurately delineated.

ated. Surely it is rather too much to bestow a folio upon the natural history of a frog, in which that animal is painted in a great variety of attitudes. In this manner of extending natural history, it is evident that books may be multiplied beyond number, without bringing any accession of useful knowledge.

The advancement of the sciences has been much retarded by the following causes.

1. One of the chief causes* has been an inattention to the principal end of their cultivation; that is, public utility, or what contributes to the convenience and happiness of life. Instead of this, most men have no other object in the pursuit of knowledge, than to gratify curiosity, or to give a variety to their amusements, or to serve the purpose of vanity and ostentation. Perhaps no science has suffered so much as medicine by the neglect of its true end; which, as I before observed, is to preserve health, to prolong life, and to cure diseases. It has, indeed, made the slowest progress of any

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* Bacon de Augmentis Scientiarum.

of the useful and practical arts; not so much from any deficiency of genius, as from a misapplication of it; nor yet from want of learning; for no profession can boast of more men eminent in every branch of useful and polite literature. Physicians have not only successfully cultivated every science connected with their own professions, such as anatomy, botany, chemistry, and the various branches of natural history; but have often distinguished themselves as poets, mathematicians, and philosophers. Yet how few physicians can we name, who, either by their genius, or industry, have advanced the practical part of their own profession! how many, on the contrary, could we name, who have corrupted it, by indulging their own imaginations, and even checked the slow improvement, which time naturally brings to every art founded on observation and experience! But the reason why medicine has made such slow progress, in comparison of the other practical arts, may be partly referred to the difficulty and intricacy of the art itself, and partly to some peculiar disadvantages under which the profession lies, and which I shall afterwards endeavour to explain.

2. There is a certain metaphysical subtlety, which is not only useless in our inquiries into nature, but does real mischief, by giving genius and industry a wrong direction. This involved all science, for many ages, in darkness and controversy. It was carried to the greatest length by the shool-men, many of whom having great acuteness, abundance of leisure from their monastic life, little acquaintance with good authors, and still less with the works of Nature, spun out of a small quantity of matter, those cobwebs of learning, curious indeed for the fineness of the thread, but of no substance or utility. As their writings consisted of subtleties, and a play of words; as they occasioned perpetual wranglings, and led to no useful consequences, the wiser part of mankind became disgusted with them; so that now the old school-philosophy has fallen into universal contempt. This philosophy corrupted no science more

than medicine. From the days of Galen, till the middle of the last century, all the institutions of physic were filled not only with the doctrine of elements and temperaments, but with inquiries, Whether the procuring of health be the design or end of medicine? whether disease is a quality or relation? and such like. They were generally disputes about words; and whenever the terms were defined, the controversy was at an end. It is really melancholy to reflect on the industry, erudition, and often genius, that was wasted in such disputes as disgrace the human understanding; and was employed in corrupting an art, that more requires attentive and sagacious observation, than metaphysics, to bring it to perfection.

An useless subtlety may be displayed in two ways; either in the prosecution of inquiries of no importance, but of difficult investigation; or by treating important subjects in a way that leads only to fruitless speculation and controversy. We have examples of the first in the old school-logic, and in most metaphysical disquisitions, ancient or modern. I acknowledge the usefulness of such, considered as an exercise for young minds. They may sharpen the invention, strengthen and improve the reasoning faculty, and tend to fix the attention; but when long dwelt upon, they withdraw the attention from the study of nature and the practical arts; they tend to make men rather ingenious disputants than solid reasoners; and beget a habit of wrangling upon every subject, extremely disagreeable in conversation. The practice of balancing things with a finical precision, is unfavourable to the enlarged views of genius, the advancement of the sciences, and the successful management of business in private life. These require only an attention to probabilities, to leading principles, and to the great outlines of objects, a quick discernment where the greatest probability of success lies, and habits of acting, in consequence of this, with facility and vigour.

We treat important subjects in a manner that leads only to fruitless speculation and controversy, when we labour in a minute discussion of supposed necessary preliminaries, and points which we fancy to be essentially connected with them; though, in reality, they have no connection at all, or a very remote one. It is the same useless labour, when we pierce beyond certain limits into Nature, and attempt the investigation of causes, either beyond our reach, or such as, if known, could lead us to no useful consequences. Thus, philosophers, before Sir Isaac Newton appeared, often attempted to explain the cause of gravity. But that great man contented himself with investigating the laws according to which it acts, and only proposed a conjecture of its cause in the modest form of a query. The laws according to which gravity, magnetism, and electricity act, are a proper subject of inquiry; because they are within our reach, and because the knowledge of them leads to the most useful consequences: But their causes will probably ever elude our deepest researches; nor, perhaps, would the discovery be useful. The reciprocal influence of the soul and body is one of the most important inquiries in medicine; but an investigation into the nature of this union, is equally obscure and unnecessary.

3. There is another species of useless subtlety, which consists in a scrupulous exactness in regard to arrangement and method. These should, without doubt, be attended to in treating of any subject, but are peculiarly necessary in all the departments of natural history. The proper distribution of plants, and other productions, into their several orders, genera, and species, is a great assistance to the memory, and leads to the knowledge of their virtues. But a complete classification is a matter of the greatest difficulty, and can never be attained, without a knowledge of all the particulars proposed to be classed. It may be attempted upon different principles, as is the case with the various systems of botany; and though one of them may, upon the whole, be more perfect than the rest, yet each of them may have its peculiar advantages. In the same manner, diseases may

be classed according to their symptoms, their remote, or their proximate causes; and in various other ways, all of them very imperfect, but each useful in some degree.

There are many conveniences attending a proper arrangement of diseases. By bringing those together that have a natural affinity, the history of one disease throws light on that of another; and, by comparing the circumstances in which they agree, general principles are formed in regard to the genus or order. But this advantage can attend only the arrangement of diseases upon the principle of natural and real affinity; as for example, in intermitting fevers, topical inflammations, and haemorrhages; but it cannot be obtained from arrangements purely artificial. The different orders of diseases, comprehended by nosological writers under the class of *cachexiae*, donot agree in any circumstances of real connexion, from which the class can be defined. Most, even of the particular genera forming its different orders, are dissimilar in every material circumstance. A proper arrangement of diseases is of service, by making it easy for a physician, who finds difficulty in a case of practice, to compare it with similar cases related by authors. It likewise facilitates the communication of observations by shortening descriptions.

The want of clear and precise definitions has been the cause of much confusion and disputation in medicine, as well as in other branches of science, abstract mathematics excepted. It seems now to be agreed, that it is most convenient, on the whole, to define the genera of diseases by a simple enumeration of such symptoms as are most generally present, as are obvious to the senses, and that serve to distinguish them from others which they most resemble. Definitions of diseases ought not to include any hypotheses in relation to their proximate causes, nor should they at all point at such hypotheses; otherwise physicians, unless their opinions of proximate causes are the same, can never agree in annexing the same ideas to the same words. When diseases are defined by a simple enumeration of obvious symptoms, there is little room left for disagreeing about the name to be given to any patient's complaints. Definitions of diseases ought, as far as possible, to be taken from symptoms existing together; but sometimes it is necessary, in order to characterise the disease, to enumerate symptoms as they occur in succession, as in the cases of intermittent and exanthematous fevers. They should not, if it can be avoided, include symptoms which happened in the beginning of the disease, of which perhaps the patient can give no account; nor should they depend upon the duration of a disease, because that is always uncertain. Sometimes it is necessary to include the external or occasional cause of the disease in the definition, since the symptoms alone are not sufficient to distinguish it from others of a different nature. But the external cause should never make a part of the definition, unless it be obvious. Established names ought not to be changed without some very urgent reason; but whenever medical writers have generally agreed to give a name to a certain assemblage of symptoms, that term, to prevent confusion, should, on no account, be applied to a different assemblage.

After all, it is impossible to define the genera of diseases with such accuracy, as not to leave it doubtful, sometimes, to what genera some particular cases should be referred. There is greater difficulty in giving a systematic arrangement of diseases than of bodies in natural history, arising from the frequent uncertainty of their diagnostic symptoms, from their symptoms not being permanent, and from the frequent complication of diseases with one another.

They who have hitherto attempted to class diseases methodically, have differed widely from one another in regard to the number, distribution, and definitions of the classes, orders, and genera. What some have enumerated as genera, others have considered as species or as symptoms; nor perhaps is it possible for human ingenuity to remove the difficulties and imperfections attending every attempt of this kind, until the knowledge of particular diseases, and the science of medicine, are rendered perfect.

It is evident, therefore, that this subject of arrangement presents an ample field for disputes; by which the attention is diverted from the study of diseases themselves, and of the proper method of treating them, to fruitless speculations about the order in which they should be arranged. I call them fruitless, only so far as they waste too much of that time and attention which might be more usefully employed. Upon this subject, I must recommend to you Dr Cullen's arrangement of diseases, as being natural and simple; and also on account of the clearness and precision of his definitions.

If we carry our studies in natural history no farther than to a just arrangement, and a knowledge of names, what we have learned is of no more consequence, than the knowledge of a Greek grammar, and of the words in a Greek dictionary, would be to one who was never to look into a Greek writer. I speak of natural history with regret, as I see its principal purpose too much neglected. I see it studied rather as a matter of curiosity, or as furnishing subjects of ingenious speculation, than as subservient to real utility. It is of little importance to settle the classes, orders, and genera of plants, in comparison of ascertaining their uses; yet the one subject has been attended to very closely; the other has been worse than neglected; it has been corrupted by many false facts, especially in what relates to medicine. Much pains have been taken to place those worms that infest the human body in their proper ranks, and to examine their structure with the greatest accuracy; but little proportionable care has been taken to ascertain the signs of their existence in the body, the symptoms they produce there, and the most effectual method of destroying them. I cannot, however, omit, on this occasion, doing justice to the merits of the great Linnaeus, who has displayed so original a genius, in reducing all the subjects of natural history into so perfect and beautiful a system. Nor has he stopt here; he has shewn the most enlarged spirit of observation, in applying natural history to the useful purposes of life, particularly to agriculture and medicine.

4. The advancement of the sciences has been much retarded by the credulity of those who have cultivated them. This credulity discovers itself by an easy acquiescence in what are asserted to be facts, although not properly authenticated; by a fond belief in the powers of certain delusive arts, by a bigotted attachment to some great names, or by a superstitious veneration for antiquity.

(a) An easiness of belief in regard to facts, by admitting them without authority, has corrupted every branch of natural knowledge, but none of them so much as medicine. Facts depending upon the animal oeconomy, must be difficult to ascertain; because it is subjected to sudden and unexpected changes, from various causes which we cannot trace, and often depending not on any material causes, but on some unknown affection of the nervous system. A heated imagination, therefore, may easily magnify them, and fraud may easily counterfeit them, whilst, at the same time, it is difficult to detect the error. Hence our accounts of the effects of remedies still remain full of uncertainties and falsehoods; while many other branches of natural history, chemistry in particular, have of late been happily cleared of them. Medicine suffers more from this cause than even from theories. The weakness of a theory is easily detected. The understanding of one sensible man is sufficient for this. But it frequently requires the united labours of many to distinguish facts that are fully and candidly represented, from such as are false or exaggerated; nor can it be done until an opportunity offers of repeating the observation or experiment, perhaps at the risk of a patient's life. I do not mean to insinuate here, that no facts should be admitted into natural history, or medicine, but such as are thoroughly established. I mean only to shew the impropriety of mixing uncertain reports and undoubted truths, without making a proper distinction between them. Whatever is asserted to be a fact, although somewhat extraordinary, and supported by slender authority, yet deserves to be recorded, till the truth of it can be ascertained: nothing shews more ignorance of Nature, or more self-sufficiency, than to reject facts merely because we cannot account for them.

(b) A fond belief in the powers of certain arts, particularly astrology, natural magic, and alchemy, has greatly retarded the progress of knowledge, by engrossing the attention of men of genius, and by introducing, into medicine especially, a multitude of false facts, founded on superstition and delusion. These arts, which promised to be of use in life, laid such hold on the imagination, that no power of reason was able to free men from their enchantment. At the same time, they have accidentally given rise to some curious discoveries, and their effects on the mind would furnish some excellent materials for the history of the human imagination.

(c) A bigotted attachment to certain great names, has done much mischief to science. The history of philosophy exhibits to the world, from time to time, some man of distinguished ingenuity who has erected a system. This system has been adopted for a few years. Learned men have commented upon it; some have diffusely explained it, others have abridged it. In the mean time, none of those authors rose higher than their source; few of them so high. In the succession of a few years, another original genius has arisen, exposed the weakness of his predecessor's system, and established another in its stead. This, after having the like honours paid to it by commentators, expositors, and epitomisers, has sunk, in its turn, into contempt and oblivion. This has been the fate of medicine, from the days of Hippocrates down to the present time, when there appears to be a general disposition to throw off the shackles of authority, to appeal to Nature in matters of fact, and to assert the right of private judgment in matters of opinion and reasoning.

ing. I do not mean to insinuate the possibility of every individual's thinking for himself in these matters. Nature never intended the bulk of mankind either to think for themselves, or to act from principles of their own. I only mean to express my regret, that men, blessed with superior talents, should be swayed by an authority they ought to have controlled; and should assent to doctrines, which a little exercise of their own judgments would have shewn to be ill-founded.

(d) Another obstacle to the improvement of science, similar to the former, has been a blind and superstitious veneration for antiquity. It is inconceivable to those who are acquainted only with the present state of the learned world, and with the free spirit of inquiry that now prevails, to what an absurd height this attachment to antiquity was formerly carried; how much it has cramped the efforts of genius, and retarded the progress of knowledge. Yet if we consider the source of this attachment at the time when it chiefly prevailed, it appears to have been natural and excusable. Upon the decline of the Roman empire, all the useful sciences and elegant arts decayed apace, and at last, by successive irruptions of Barbarians, were entirely extinguished. A cloud of ignorance overspread mankind till towards the end of the fifteenth century. From time to time, however, some sparks of genius broke through the gloom, and fortunate accidents preserved some of the most valuable remains of ancient arts and wisdom. Medicine underwent the fate of the other sciences, and slept in the same darkness. About the middle of the fifteenth century, Constantinople was taken by the Turks, and many of the Greek manuscripts found there, were brought into Italy by Theodore Gaza. The noble art of Printing was discovered about the same time, which soon spread those treasures of antiquity over Europe. About this period, so important in the annals of history, and so big with great events, men began to wake out of that lethargy in which they had been so long sunk. Upon the first discovery of the

Greek and Roman writers, the visible superiority of their sense, their taste, and their elegance, beyond what the world had seen for many ages, was soon perceived and acknowledged. It was therefore to be expected, that men of science and ingenuity should at that time have employed themselves in recovering, translating, and commenting on the remains of antiquity which had escaped the ravages of time and barbarism, and lain for many centuries buried in the cells of monks. How much was the world obliged to those restorers of learning! The immediate effects produced by the recovery of the ancient writers, shewed clearly in what their principal excellency consisted. All the fine arts, painting, sculpture, architecture, speedily rose to a high degree of perfection. Purity of language, and an elegant simplicity of composition, especially in poetry and history, were particularly studied. But natural history and natural philosophy remained much neglected. The reason was this; in all works of taste and imagination, in poetry, in eloquence, in simplicity, correctness,

rectness, and elegance of composition, the ancients possessed an excellence hitherto unrivalled. In abstract mathematics, likewise, they will ever remain as standards of that clearness and precision which should be the characteristics of mathematical reasoning. But in natural history, and in natural philosophy, they were not equally successful. This was owing partly to their not having bestowed sufficient attention on those subjects, and partly to this, that these sciences depend for their advancement, not so much on the genius of one man, as on the accumulated labours of many. Thus a Homer, an Apelles, a Praxiteles, or a Demosthenes, may have carried poetry, painting, sculpture, or eloquence, as high, or higher, than any who have succeeded them; because, when these men died, their arts, in a great measure, died with them. But in natural history and natural philosophy the case is widely different; because every man, who applies to any branch of these studies, may avail himself of all the labours and improvements of his predecessors. As the knowledge of Nature, then, at the revival of learning, was in a low state ; and as little light was thrown on it by the writings of the ancients ; it continued to lie almost neglected, till towards the middle of the last century ; men of learning and ingenuity, before that time, generally devoting their attention to theological studies, the fine arts, and the different branches of polite and ancient literature.

The same warm admiration of antiquity which prevailed in other sciences at the restoration of learning, very properly attached physicians to the ancient writers in their own profession. It had been happy, however, for mankind, if, instead of a blind admiration of Hippocrates, justly styled the father and founder of medicine, they had imbibed some portion of his spirit for observation. Hippocrates will always be held in the highest esteem, for his accurate and faithful description of diseases, for his candour, his good sense, and the simple elegance of his style. But, instead of prosecuting his plan, and building on the foundation he had laid, his successors

sors employed their time in commenting on his works. Galen began with writing largely on what he reckoned the genuine productions of Hippocrates, and in his Commentary endeavours to reconcile all his seeming contradictions, and to prove the truth of his observations by a variety of arguments, not founded on his own extensive experience, but on the Aristotelian philosophy; some of them, indeed, subtle and ingenious, but for the most part weak and sophistical. This manner of commenting on books of observations, is extremely absurd. The first inquiry here, ought to be into the truth of the facts. Till these are confirmed by similar observations, it is a waste of time and labour, to attempt an explanation of their causes. Hippocrates has left us a number of excellent observations, together with some that are found to be true only in certain cases, and under certain limitations; some peculiar to the climate and country in which he lived; some so obscure that they cannot be understood; some ill founded; and a great number that seem curious and important, in regard to which, not one of his numerous commentators has taken the trouble to inquire, whether they were true or false. Every one of them has, after the example of Galen, attempted to prove the truth of his observations, not by similar observations of their own, but by hypothetical reasoning, drawn from the prevailing philosophy of the times they lived in. Thus the noble foundation of observations begun by Hippocrates, and the example he has set of faithful and accurate description, have, in a great measure, been neglected, while physicians, in all ages, have fondly attempted to support their opposite theories by his authority, in which they were favoured by the obscurity of some parts of his writings. Not only his observations, but his opinions, (of which indeed he was very sparing), till very lately, were opposed to the authority of facts, which appealed for their truth to the experience of every man of candour and common sense; so that a physician, in writing his own observations, found himself under a sort of necessity to shew that they agreed with those of Hippocrates, at least that they did not contradict them. The effect of this was, that the truth of Nature was often perverted, in order to make it correspond to the sentiments of Hippocrates, or even to the authority of Galen. This introduced a corruption into the very source of all solid knowledge in medicine; and, at the same time, encouraged a pompous display of learning in writing on medical subjects, that wasted the time and tired the reader, who wanted to know what Nature said, not what Hippocrates and Galen thought, in medicine. Neither is this pedantry yet extinct in Europe; there being few medical books, written in some parts of it, which are not stuffed with numerous quotations from the ancients, containing some trite observations, that answer no other purpose, but to make a parade of erudition.

5. Another obstruction to the progress of science, the reverse of the former, has been a fond attachment to novelty. This proceeds partly from a principle in the human mind,

which is gratified with whatever is new, independently of other considerations; partly from an anxiety to discover truth upon an interesting subject, which makes us often grasp a shadow for a substance; and partly from a disposition to believe whatever we wish to be true. The uncertainty of the methods of cure, in many diseases, makes patients, and sometimes physicians, eagerly adopt any new method that promises a more effectual and speedy remedy. This is the source of that universal propensity to give credit to the extravagant accounts of the effects of nostrums and quack medicines. These are recommended to a patient, with an assurance of their infallibility, an assurance which no prudent or honest physician gives as to any remedy in any disease whatever. From the same cause we have seen, in our own times, many remedies highly praised for their efficacy, in almost every disorder, and soon after neglected; such as, cold water, crude mercury, soap, tar-water, lime-water, sea-water, Ward's medicines, and even some of the poisons. All these, in their turn, were deemed infallible; and when time discovered the folly of this expectation, they have been, with the same precipitation, almost wholly laid aside; as if a medicine could not be useful in the cure of any one disease, because it was not successful in all. This attachment, however, to novelty, is not such a bar to improvement, as a superstitious veneration for antiquity. The former, from time to time, is bringing new accessions to knowledge; the latter, keeps the active powers of the mind suspended in a vain admiration of what, perhaps, was of some value in the infancy of science, but what is now universally known. A physician of coolness and sagacity may avail himself of these temporary intoxications of the public, in regard to such remedies, as they give him an opportunity of ascertaining the effects of some, from seeing them administered in larger doses, and for a greater length of time, than patients would otherwise be persuaded to take them. The passion for novelty is indeed particularly excusable in medicine; because it is natural for us to be pleased with with what seems not only to bring an accession to our knowledge, but to communicate some useful discovery.

6. The hasty reduction* of any science into a system, apparently full and perfect in all its parts, while, in reality, these parts are ill filled up and erroneous, is a bar to its farther improvement. The intention of these systems is to place a science in the most favourable light. It is, therefore, delivered in a magisterial manner, so as to acquire credit without examination; and hence a science descends in the persons of master and scholar, not of inventor and improver. Men are generally attached to systems, because they free them from the impatience of doubting, and promise them certain principles, on which their minds may securely rest; and teachers find it contributes both to their interest and reputation, to reduce the sciences into systems, seemingly complete. One who appears well acquainted with the principles of a science, and who seems to entertain no

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* Bacon.

doubt of their soundness, makes a better appearance, than one who doubts, and fairly owns that he does so. The bulk of mankind are not judges of the merit of men of deep science, and are ready enough to allow to pretenders the consequence they assume, if they do not too much over-act their part. I have already endeavoured to shew the propriety of prosecuting inquiries into Nature upon a regular and methodical plan. In teaching a science, it is equally necessary to proceed upon a plan of arrangement. But, till all the facts and principles included in a science are fully established, it is impossible to reduce it into the form of a regular system; and there are many circumstances relating to arrangement, which, in the mean time, must remain undetermined. It is, therefore, sometimes better to use the unconnected aphoristical manner, than to attempt an order, or at least to be very solicitous about an order, where there are no certain principles to lead to it.

It has been the fate of medicine to suffer, in a particular manner, from this rage of system.

It has fallen, at different times, into the hands of Galenists, Chemists, Cartesians, Mathematicians, Stahlians, and some other sects compounded of these; each of whom have moulded the whole science into a form, seemingly complete in all its parts. It has been tinctured with mystical divinity, astrology, and all the subtleties of school philosophy; according to the different attachments of physicians to those studies. But, notwithstanding the disadvantages attending these systems, a physician of genius will be able to draw from them some useful information.

7. The last impediment* I shall mention to the progress of science, in general, has been, too great attention to purity and elegance of language, on the one hand; and, on the other, an affected obscurity and intricacy of style. In works of taste, and addresses to the passions, a language highly ornamented may be very proper;

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* Bacon.

per; elegance, sublimity, pathos, are there in their proper place. But the language in which science is to be communicated, should be simple, perspicuous, and divested of all artificial ornaments. Original writers, who have new ideas to communicate, are often obliged to use new words and phrases, the better to convey their meaning; which surely they, and they only, have a right to do, provided they clearly define them. An affected intricacy of style is now in a great measure laid aside. The use of technical terms, where others equally clear and expressive can be found, is regarded as pedantry, or a cloak to conceal ignorance. This censure may sometimes be carried too far, but in general it is just. That learned jargon, which so long disgraced philosophy, was introduced from a principle of vanity, or for the unworthy purpose of excluding from science, all who were not of the profession. But it evidently retards the advancement of science, when men attend more to words than to things, whether it be an affected display of learning, or in a scrupulous regard to purity of expression or elegance of composition.

Let me take this opportunity of recommending to your serious study the writings of Lord Bacon, who of all men poſsessed, perhaps, the most enlarged and penetrating genius. He has explained the method of acquiring knowledge, and promoting science, with incomparable judgment and perspicuity. He has likewise left us some beautiful specimens of true philosophical induction, particularly in his history of the Winds. This, and some other of his essays in natural history, are to be considered in no other light, than as specimens of his method of carrying on inquiries into nature. The facts they contain are not to be depended on: he was obliged to take such as were then generally received, which, whether true or false, equally served his purpose. He uses a language peculiar to himself: It has been censured, and perhaps justly, as being too figurative, which renders it in some places obscure; but in general it is well fitted for communicating science, being clear, noble, and expressive.

LECTURE VI.

PECULIAR disadvantages under which medicine has laboured.—Inconveniencies attending the method in which it has been usually taught, entirely by the lectures of professors, or in books.—The advantages of a regular attendance on the sick, during the whole time in which a physician is studying his profession, particularly specified.—Duties of a professor of medicine.—Inconveniencies arising from the absolute confinement of the study and practice of physic to a class of men who live by it as a profession.—Advantages of laying the art open, and of gentlemen of science and abilities, who are not of the profession, studying it as an interesting branch of philosophy.—Attempt to shew that this would tend to promote the interests of humanity, by diffusing the benefits of the art; that it would facilitate the improvement of medicine; that it would most effectually support the dignity of the profession, and secure the success of every individual belonging to it, in proportion to his real merit.—Conclusion.

LECTURE VI.

I ENDEAVOURED in a former lecture to explain some of the principal causes that have obstructed the progress of science in general; and, where it was necessary, applied my observations particularly to physic. I thought it necessary to explain to you my general sentiments, in relation to the improvement of knowledge, because it gave me an opportunity of communicating my leading principles in the science of medicine. But, before I conclude the subject, a regard to truth and candour obliges me to take notice of some peculiar disadvantages attending medicine, which seem to have greatly retarded its progress. This I do, not from a desire to expose the weakness of a profession, the honour of which my inclination, and many ties, lead me to support; but merely with a view to establish this honour upon a liberal and solid foundation; and to put you on your guard against certain errors and inconveniencies, to which you might otherwise be exposed. As I have the misfortune to differ from many of my brethren on this subject, while I propose my own sentiments with freedom, I wish to do it with a proper deference to their judgment. The peculiar causes which have retarded the progress of medicine, besides the difficulty and intricacy of the art, formerly mentioned, appear to me to have arisen partly from the manner in which it has been usually taught, and partly from its having been confined to a set of men who live by it as a profession.

In the first place*, it must be observed, that the general method of conducting education in universities, does not seem so well calculated to advance science as to diffuse it, not so well fitted to promote particular arts, as to communicate general principles. Those who teach the sciences, often make use of various allurements with their students; sometimes with the laudable view of engaging their attention; sometimes from a desire to give a dignity to their own characters, by pretensions to discoveries, by the triumph of confutation, the ostentation of learning, or the veil of mystery. For the conveniency of teaching medicine, it has been usual to adopt the synthetic plan; that is, to lay down general principles, especially such as relate to the proximate causes of diseases, and the mode of operation of remedies, and to mention facts so far only as they serve to illustrate those principles, or as they are clearly deducible from them. Medicine likewise, as usually taught in universities, instead of being represented as an art imperfect in its most material branches, instead of having its deficiencies pointed out, with a view to their being supplied, is digested into a regular and seemingly perfect system. In this light it is beheld by the student, who embraces hypotheses with the same facility and unsuspecting confidence as he would do facts established on the testimony of his senses; he imagines he understands the causes of all diseases, and the manner in which remedies act in removing them; his mind is at ease in having always firm principles to rest on. But how fallacious these principles have generally been, is sufficiently evinced in the history of medicine, which shews that they have been constantly fluctuating. For example, a morbid acrimony of the blood has been assigned as the proximate cause of certain diseases; the nature of this acrimony has been specified; the manner in which occasional causes have produced it has been explained; plausible indications of cure have been laid down in consequence of these supposed discoveries; remedies have been prescribed correspondent to these indications, and their operation in destroying the acrimony has been pointed out. Yet perhaps, upon farther inquiry, it may be found that there is no evidence of any acrimony existing in these diseases; or that, supposing there is reason to suspect in general that there may be such a disorder in the blood, we are still ignorant of its specific nature; that we do not know in what manner the external causes produce the symptoms, whether by first vitiating the blood, or by acting immediately on the nervous system; that, from our uncertainty in regard to these circumstances, the indications of cure become likewise uncertain; that there is no proof of the remedies acting in the manner which had been supposed; and that, perhaps, some of those remedies, though in repute for many ages in the cure of such diseases, have either no effect at all, or at least none in the doses commonly given. In short, it may sometimes be found, that all we certainly know of the matter, is, that certain external causes produce those diseases; that experience has ascertained the effects of some remedies in curing them; and that this experience is the only rational basis on which we can ground our future practice.

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* Bacon.

A student, however, is seldom aware of the fallacious nature of such hypothetical structures, as he is a stranger to the circumstances on which they are founded. They appear plausible, well connected, and are particularly grateful, as they tend to conceal the difficulties of the profession.

Medicine has little chance of acquiring improvement from a physician educated in the faith of systems, because he scarcely supposes it admits of any. He treats his patients according to the established rules; and when they die, he is satisfied that every thing was done for them that art could do. It might be supposed that enlarged experience, and the riper exercise of his understanding, would remove his prejudices; but a little acquaintance with mankind shews, that early and strong impressions are with great difficulty erased; every circumstance that tends to confirm them, is readily attended to, while every one that tends to weaken them, is overlooked, or ingeniously explained away; so that time seems frequently to confirm our errors.

It is, indeed, difficult and painful for men to give up favourite opinions, and to sink from a state of security and confidence into one of suspense and scepticism. Accordingly we find that physicians do not easily change the principles they first set out with. We have remarkable examples of some, who, after having written systems of medicine early in life, have lived to be old, have been admired for their genius, have had extensive practice, and though their systems in the mean time had gone through many editions, yet no material alteration has been made in them; a proof how much they were attached to their first opinions.

Although the principles of the medical art are originally established by investigation, or induction from particular facts, yet it would be both tedious and unpleasant to teach it entirely upon this plan. I am therefore of opinion, that the best method of teaching it, is to unite the synthetic method, which is most commodious for communicating knowledge, with the analytic one, which leads to improvements and inventions. If medical education was conducted in this manner, a student would be, in some degree, an eye-witness of the observations and experiments, upon which the principles of the science are founded. For example, if he were daily conversant among the sick, he would enjoy many advantages beyond what can be derived from books or lectures. Some of these I shall mention.

1. Whatever one sees, makes a deeper and more lasting impression on his mind, than what he learns from description.

2. There are many circumstances relating to diseases and remedies, of which it is difficult to convey a just idea, viz. different appearances of the countenance, state of the pulse, breathing, voice, smells, tastes, and different degrees of heat, &c. Hence every experienced physician, or indeed artist of any profession, knows much more than he is able to communicate.

3. Diseases are described in system as existing by themselves; but in practice they are found complicated in such various forms, as no description can specify, and to which no general practical rules can be applied.

4. Medical facts are often related imperfectly; sometimes from the author's inattention to the concomitant circumstances, sometimes from his thinking them of no importance. But the truth is, facts are seldom mentioned in systems, unless with a view to establish a theory, or to recommend a medicine; and whatever facts are either not subservient to these views, or are repugnant to them, are often but slightly mentioned, or suppressed. Medical writings likewise abound with false or exaggerated accounts of the effects of particular remedies, occasioned by avarice, vanity, credulity, a warm imagination, or a weak judgment.

5. A student, educated in this manner, acquires the habit of attention and discrimination; he brings the truth of general principles to the test of experience; he discovers the falsity

sity of some of them, and learns to ascertain the many exceptions and limitations to which others are subjected; he often finds the most plausible indications of cure to be delusive, and that, among the numerous remedies recommended, in consequence of these indications, none are able to relieve the patient. By these means he acquires an early distrust of all theories, however specious.

6. He ascertains the importance of the several branches of medicine, and of all medical inquiries, as relative to the main end of his profession, the preventing or curing of diseases; and regulates his application to them accordingly.

7. He becomes familiarised to the humours and weaknesses of patients; he acquires some address in managing their tempers, and in soothing their distresses; a conduct which, in certain circumstances, is of real consequence.

8. He begins to acquire an address in the management of the sick, a quickness of apprehension, a composure and presence of mind,

and some decision and resolution in sudden emergencies. A young physician, who has drawn his knowledge only from books or lectures, although he may be ingenious and learned, and consequently able to talk plausibly, will yet be extremely embarrassed when he enters upon practice.—Medicine is not merely a speculative science to be acquired by study alone; it is an active and practical art, the proper exercise of which can be attained only by long practice. This is allowed to be the case in all the other practical arts, and the education in them is conducted accordingly. Let us suppose of a young man designed to be a sailor, that for the first years of his education, he studies mathematics, natural philosophy, and navigation, but has never been at sea; when he makes his first appearance there, what must be his situation? He can talk of mechanical powers, of friction, of the nature of magnetical effluvia, of the theory of the Winds, and, in short, shew himself master of every branch of his profession, so far as speculation could carry him. But can he handle a rope? can he go aloft and furl the sails? can he make an observation in a rolling sea? can he do any one useful work aboard the ship, or direct the sailors how to navigate her in a storm? Who would trust himself to the direction of such a sea commander?—The case is much the same with a young physician who has had what is called a regular education, and is well grounded in every branch of his profession except the practice; in which he must be defective, if he has not for some years diligently attended the sick. A careless and irregular attendance on an hospital for a few months before he settles in business, is very insufficient to qualify him for the important charge. I own, however, that a young man cannot reap much advantage by attending the sick till he is acquainted with the rudiments of physic: But there is no impropriety in his studying and applying to practice at the same time; on the contrary, it is attended with the advantages above mentioned; and the shortness of the time usually allotted for medical education, does not allow of their being separated.

9. A physician who has been educated on this plan, whose mind has never been enslaved by systems, because he has been a daily witness of their insufficiency, instead of being assuming and dogmatical, becomes modest and diffident. When his patient dies, he secretly laments his own ignorance of the proper means to have saved him, and is little apt to ascribe his death to his disease being incurable. There are indeed so few diseases which can be pronounced, in their own nature, desperate, that I should wish you to annex no other idea to the word, but that of a disease which you do not know how to cure. How many patients have been dismissed from hospitals, as incurables, who have afterwards recovered, sometimes by the efforts of unassisted nature, sometimes by very simple remedies, and now and then by the random prescriptions of an ignorant quack. To pronounce diseases incurable*, is to establish

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* Bacon.

indolence and inattention as it were by a law, and to skreen ignorance from reproach. This diffidence of our own knowledge, and just sense of the present imperfect state of our art, ought to incite us to improve it, not only from a love of the art itself, but from a principle of humanity. I acknowledge, however, that such a diffidence, as I have described, if it is not united with fortitude of mind, may render a physician timid and unsteady in his practice; but, though true philosophy leads to diffidence and caution in forming principles, yet, when there is occasion to act, it shews how necessary it is to have a quickness in perceiving where lies the greatest probability of success; to be decisive in forming a resolution, and firm in carrying it into execution.

It is much in the power of a teacher of the art, to obviate the inconveniencies commonly chargeable upon systems. It is his duty, in treating of any subject, to give a full detail of facts, to separate the real from the pretended, and to arrange them in such a manner as may lead to the discovery of causes and general principles. If these cannot be established by a just induction, he may with propriety suggest an hypothesis; but, while he gives his reasons for thinking it probable, he should, with equal impartiality, state every objection against it; and, far from throwing a veil over the numberless imperfections of his art, he should be solicitous to point them out, and at the same time direct to such observations and experiments as may tend to remove them. Sensible of the warm imagination and credulity of youth, of their proneness to admiration, and their eagerness to have every fact accounted for, he ought to guard against the errors into which these dispositions may lead them, and should endeavour to direct their ardour in the pursuit of knowledge to proper subjects; not to those that merely amuse the fancy, but to such as exercise the powers of useful observation and invention; to subjects of real and permanent importance.

I throw out these observations with freedom, because I am well acquainted with the liberal spirit that prevails in this University, in every department of science, and in none more than in all the branches of medicine. To this University I owe, in a great measure, my own education; but there are none of my obligations to it which I remember with more gratitude, than the acquisition of some portion of that freedom of spirit, for which it has always been distinguished. The medical societies of students, which have been conducted with decency and regularity, have in this, as well as in other respects, produced the best effects. In these, they have been taught to feel and exercise their own powers, to arrange their ideas, and to express them with facility; and that honourable emulation has been excited, which is a principal spring of diligence and activity. Let me take this opportunity of doing justice to the merit of several gentlemen, who have, within these few years, done honour to this medical school by their inaugural dissertations. In these, several important investigations have been carried on, by a set of accurate and well conducted experiments,

ments, under the direction of my learned and ingenious colleagues. This method of giving a specimen of a young physician's genius, is attended with so many advantages, is so creditable to himself, and so useful to the public, that I should be extremely sorry to see it fall again into disuse.----But to return.

I shall now endeavour to shew, that the confinement of the study and practice of physic entirely to a class of men who live by it as a profession, is unfavourable to the progress of the art.

Nothing can so effectually tend to the improvement of an art, as the making it the interest of those who practice it to contribute to its improvement. But it happens unfortunately that the spirit and application required for the advancement of medicine, is often checked by a necessary attention to private interest. Physicians are influenced by the same general motives of action with other men. Some of them love medicine, and would gladly devote their time and attention to it, as far as their situation could admit; others practice it merely as a trade. But the state of our profession is singular. A common artificer has no other way of rendering himself eminent in his trade, but by excelling in it. Of this, all mankind are judges. If he is a bad workman, no address or qualifications of any other kind can avail him. No gentleman can hope to rise in the profession of the law, who does not possess the abilities of a lawyer. The proofs of his knowledge, ingenuity, and eloquence are daily exhibited to the world, and their value is duly ascertained. The public have the same opportunity of estimating the merits of a divine. In short, every man's merit, in his profession, may be well known to the public; and is in general suitably rewarded. The science of medicine alone is kept so carefully concealed from the world, and the art must necessarily be practised in so private a manner, as renders it difficult for the public, from the success of a physician's practice, to form a just estimate of his knowledge. Accordingly, in no other profession is the reward of merit so uncertain. If a physician is only acquainted with the outlines of practice, and has a good share of address and common sense, he may succeed well. This success is not surprising, if he is generally esteemed as a man of genius and knowledge in other subjects; because, it is presumed, that these will extend to his own profession. But it is more unaccountable, though the case frequently occurs, that physicians rise to great eminence, who, far from possessing learning or abilities of any kind, are known to be men of weak understandings.—Those people seem to have a strange idea of physic, who trust their lives in the hands of a man, whose discernment and common sense they would despise on any other occasion.

The check which the improvement of medicine must receive, from with-holding the reward justly due to those who excel in it, is sufficiently obvious.—A physician, when he sets out in the world, soon perceives that the knowledge most profitable for him, is not that merely of his profession. What he finds more essential, are the various arts of insinuation and ostentation. This leads to views very different from those of genius and science. To his real merit as a physician he cannot easily find a patron; because none are judges of this, but those of his own profession, whose interest it often is to have it concealed

By what I have said, I mean only to represent the disadvantages naturally consequent on leaving it to physicians to judge of the merits of their brethren. It is putting human virtue to too severe a trial, and indeed it is a trespass against the most obvious maxims of prudence and humanity, to suffer people to be tried by judges whose interest it is to condemn them. Nor do I mean, in making an observation which is equally applicable to every class of men, to include all the individuals of our profession. There is a virtue found among many of them, which can stand the severest test; and there is an elevation of mind, that generally accompanies genius, which renders those who possess it equally superior to the suggestions of envy or interest, and to all the low arts of dissimulation. The difficulties which regular physicians encounter in attempting to introduce any improvement in practice, is one of the principal causes that induce such of them as love the science, to turn their attention to some other branch of medicine, which they can cultivate with more safety and freedom. In all these, their discoveries have been numerous and useful. But how rapid a progress would the practical part of medicine make, if physicians were equally at liberty to improve it, under the inspection and patronage of men qualified to judge of their merit, and who were under no temptation, from sinister motives, to depreciate the improvements which they propose!

It were to be wished, that ingenious men would devote half the time to the study of nature, which they usually give to that of opinions. If a gentleman has a turn for observation, the natural history of his own species is surely a more interesting subject, and affords a larger scope for the display of genius, than any other branch of natural history. If such men were to claim their right of inquiry into a subject that so nearly concerns them, the good effects in regard to medicine would soon appear. They could have no interest separate from that of the art. They would detect and expose assuming ignorance, and would be the judges and patrons of modest merit. Cases often occur where a physician sees his patient hastening to dissolution; he knows a remedy that affords some prospect of saving his life; but it is not agreeable to common practice, and is dangerous in its operation. Here is an unhappy dilemma. If he gives the remedy, and the patient dies, he may be ruined; for his conduct will be watched with a malignant eye. But if the scheme of gentlemen of fortune applying to the study of physic should take place, the encouragement and assured protection of knowing and disinterested judges, would animate a physician in his practice. Such judges, not fettered by early prejudices, unawed by authority, and unbiassed by interest, would canvass with freedom all the commonly received principles of medicine, and expose the

uncertainty

uncertainty of many of those maxims, of which a physician dares not seem to doubt.

There are some advantages, which gentlemen who study medicine only as an interesting branch of natural philosophy, possess beyond physicians by profession. A physician, amidst the necessary duties and anxieties of an extensive practice, has little leisure to attend to any subject that is not directly connected with his business; nor does he always possess that tranquillity of mind which is so requisite in every kind of investigation, and particularly in planning and conducting a train of experiments. Lord Bacon had as enlarged views of medicine, of its deficiencies, and of the proper method of supplying them, as perhaps any physician who ever wrote. Dr Hales has been one of its greatest benefactors, by his discoveries, by the openings he made in different branches of the science, which have since been further prosecuted, but principally by the excellent example he set of ingenious and accurate experimental investigation. Cornaro, a Venetian nobleman, when some years turned of four-score, composed a little treatise on regimen, written with singular candour, simplicity, and precision. With more pleasure could I name Mr Boyle on this occasion, had not his credulity lessened that esteem, which his diligence, genius, and many virtues, so well merited.

But, not to insist further on arguments to shew that there is little reason to expect improvements in our profession, while it continues on its present narrow footing, I shall only observe, that it appears from the history of physic, that the improvements in the practical parts of it have seldom been owing to those who valued themselves upon being regular, systematic, rational practitioners; nay, what is more extraordinary, such improvements have been often opposed by them, with keenness and acrimony; and seldom adopted till after a long struggle. I could give instances of this in the case of blisters, opiates, Peruvian bark, antimony, mercury, inoculation of the small-pox, and I may add, the cool regimen in fevers. Many important discoveries,

coveries, relating to the cure of diseases, have been made by accident; and some valuable remedies have been communicated to us by the natives of America, and other illiterate nations. But, till of late, it would be difficult to point out many solid improvements in practice, which have been the result of reasoning, or of any regular train of observations or experiments. On the contrary, improvements that have been offered to the world, and which appealed for their justness to experience, have been usually adopted, not upon repeated and more accurate trials, but upon the authority of great names, or from the prevailing philosophy of the times.

There has been much reason to complain that the discoveries of those men, who were not of the medical faculty, have not always been examined with that candour, which their importance and success required. Yet from such men very substantial improvements may sometimes be expected. Even quacks possess some advantages, in their practice, beyond regular physicians; as they ſeldom can suffer much, either in their interest or reputation, from the bad success of their experiments. But they have another advantage above the regular physician, from having more extensive practice. I grant, however, that the ignorance and inattention of most of these men, make them profit but little, in proportion to what might be expected, from their experience and unfettered practice; and I own, too, that little regard can be paid to their veracity, in their accounts of cures. But it is a physician's duty to search for knowledge from all sources, however impure and contemptible; and he may avail himself of that experience, which the empiric himself is neither able nor willing to turn to account. It was from strolling chemists, and the lowest artificers, and not from the schools of philosophy, that Mr Boyle drew that large and useful collection of facts, with which he has enriched many branches of science. I must however observe, with pleasure, that the same freedom of inquiry, which has enlightened every other branch of natural knowledge, begins now to extend to medicine; that the tyranny of authority and systems declines apace; and that there is a fair prospect of the science being rebuilt on the more solid basis of nature, on facts, and an accurate induction from them.

It is said, by those who insist on the propriety of confining the study of physic to a class of men who live by it as a profession, That the science is so abstruse, that it cannot be understood but by a person who devotes himself entirely to the study of it. The little progress it has made, notwithstanding the labours of so many ingenious and learned men wholly directed to its cultivation, is brought as a proof of its difficulty. It is said, that if people were encouraged to study physic who were not regularly bred to it, and who do not intend to follow it as a profession, quacks would be multiplied, and patients would lose that confidence in the physician, which is as necessary for their own sakes as for his. It is further said, that a smattering of physic could tend only to fill people's minds with imaginary diseases, and apprehensions of danger upon slight indispositions.

These reasons have appeared so powerful to many of the faculty, that they have watched with a jealous eye all intruders, and have often treated them with abuse and ridicule, even when it was apparent that they were actuated purely by motives of humanity. It would not be candid to ascribe this to any sordid views: Enlarged knowledge produces a liberal and unsuspicious spirit; and no profession can boast of more men of learning, ingenuity, and liberal education, than ours. But as the reasons above assigned, for the absolute confinement of the study of medicine to physicians, do not appear to me satisfactory, I shall take the liberty of examining them particularly.

The difficulties, which a gentleman, not intended for the profession, is to encounter, in acquiring some share of medical knowledge, are greatly exaggerated. Some of them are real and unavoidable; but the greater number are either imaginary, or arise from the mysterious form in which the science lies concealed, unnecessarily involved in technical terms, and incumbered with inquiries of no utility, or not applicable to practice. Medicine, in one point of view, is a science of boundless extent; but this should not deter any person from the study of it; as the same may be said of every branch of natural knowledge. In our prosecution of any of them, the farther we advance, the more sensible we become of their difficulty, and of the further improvement of which they are capable. The argument, however, brought to shew the difficulty and intricacy of the medical art from the slowness of its improvement (notwithstanding the joint labours of so many physicians employed in this single pursuit) may be obviated, by observing, that if by medicine is meant, the art of preserving health and curing diseases, the truth is, that very few physicians of genius have endeavoured to cultivate it, and that some of those few have attempted it in a way, that could not reasonably be expected to succeed.

It will readily be owned that a physician, who has regularly studied the several parts of medicine, must possess great advantages, even in regard to practice, above a gentleman, who has only attended to them in a more cursory manner. But there is no reason to say, that one must be a perfect master of these parts, before he can attain such a knowledge of the practice, as may be in some degree useful, when the assistance of an able physician cannot be procured. Surely it is not a matter of such difficulty, for a gentleman of a liberal education, to learn so much of medicine as may enable him to understand the best books on the subject; and to judge of the merit of those physicians to whom he commits the charge of his own health, and the health of those more immediately under his care and protection. It is difficult to ascertain to what extent a gentleman should be instructed in medicine, before he can pretend to practice as above mentioned. The most that can be required of him, is such a degree of knowledge as is commonly possessed by practitioners of acknowledged merit, and such knowledge as physicians, educated in different schools of medicine, and attached to different theories, concur in judging essential.—In this view, it is evident, that he should know as much anatomy as is necessary to understand the animal oeconomy in its sound and morbid state; that he should know the principles of chemistry, particularly in their application to pharmacy and the other parts of medicine; that he should be acquainted with the history of diseases, especially with those circumstances that serve to distinguish one from another, when apparently similar, but really of a different nature, and requiring a different method of cure; and that he should be instructed in the nature of the usual remedies. The knowledge of these last mentioned branches, should be drawn from medical writers of distinguished sagacity, accuracy, and candour; but, above all, from observation and experience, the purest and least fallible source of medical science. He may derive singular advantages from the conversation of an ingenious and experienced physician, who is able to direct his studies, to distinguish between genuine and pretended facts, and, amidst the load of learned rubbish with which medicine is encumbered, to select what is truly useful. Such a course of study, as I have described, though somewhat formidable at first view, is really not so to those who love science, and who have laid a tolerable foundation of learning. There are, indeed, difficult cases, that often occur in practice, which require the assistance of the greatest medical discernment; but any man of good understanding may comprehend the general principles of the theory and practice of physic, if the facts, on which they are founded, are fully and clearly laid before him.

The objection to laying medicine open to the world like other sciences, from its tendency to multiply quacks, and to lessen the authority of the physician, is not well founded. It is not possible to confine the practice entirely to regular physicians. Cases are continually occurring of people labouring under diseases, who can have no access to the assistance of one of the faculty. It would be barbarous to hinder those from using such remedies as appeared to them most likely to afford them relief; or to prohibit a friend or a by-stander from giving their assistance in such a situation. In fact, as every person prescribes occasionally, the only question is, whether they should receive any assistance from art, or be left to act as their fancy may lead them. If, by with-holding that assistance, every disease, where a physician was not consulted, was to be left to nature alone, physicians would have a plausible excuse for keeping the world in ignorance; because it might be alleged, that more diseases would be cured by the efforts of unassisted nature, than by the random management of people imperfectly instructed in medicine. But, in reality, this is never the case in diseases of any consequence. I shall give an example, in the general treatment of fevers, among the lower class of people, when they are deprived of medical assistance.—The unhappy patients are generally confined to a close room, where they breathe a hot and putrid air; every method is tried to produce a sweat; they are loaded with bed-cloaths; sometimes they are made to drink spiced and strong liquors; at other times large quantities of warm water gruel, although their stomach loathe it, and it occasion flatulence, sickness, and oppression. If, in consequence of great heat or delirium, they attempt to get out of bed, they are confined to it by force; nor are they suffered to change their bed or body-linen, till the fever is quite removed; by which means, the air becoming more putrid, aggravates the symptoms, and makes the disease highly contagious.—In such cases, because the patients have no physician, and take no medicine, the disease is said to be left to nature. But this is a mistake. If such patients had been really left to nature, they would have been treated very differently. They would have been indulged in whatever was agreeable to them; they would have breathed cool and fresh air; they would not have been teazed to eat or drink beyond what their appetite demanded; they would have been indulged with cold water, or small beer, in whatever quantity they pleased; they would have been suffered to get out of bed, and to enjoy the cold air, or to have few bed clothes, with liberty to throw out their limbs without control; their linen would have been changed daily, and every thing kept clean and sweet about them. Similar instances might be produced from other diseases. Patients are so far from being left to nature, when no physician is called, that they are commonly oppressed with a succession of infallible cures recommended by quacks, or by their weak and officious friends.

I must here observe, that there is a suspicion entertained of physicians, as rejecting all remedies proposed by those who do not belong to the faculty, especially if their composition is kept a secret. Whatever the case may have been formerly, or may still be among a few individuals, the censure is now ill founded. Every remedy, which has the appearance of usefulness, meets with a fair trial, from the gentlemen of our profession. I speak this with the more confidence in regard to those of the British dominions; where medicine is in general practiced with much candour and humanity: but it would be an imputation on their knowledge, and indeed on their common sense, if they were to give credit to all the accounts of cures, which daily impose on the credulity of mankind.

Physicians, in their early practice, are sometimes controled, and intimidated, from doing what they think necessary for the recovery of their patients; not by people whose education and knowledge should make their opinions respectable, but by the most ignorant, and consequently the most conceited part of mankind. Physicians have nothing to fear from the intrusion of men of science, who have turned their attention to medicine. Such will be modest in proportion to their knowledge of the subject; and will be the readiest to call for the assistance of a physician of experience and abilities, to respect his judgment, and to enforce his prescriptions; while, at the same time, they may suggest what may be useful to the ablest of the profession.

If we consider the situation of a young physician of genius, brought forward, and supported in his profession, under the honourable patronage of those who are judges of that genius; and that of another, destitute of such assistance, and compelled by necessity to attend to the prejudices, and to humour the caprices of the ignorant and impertinent intruders into his office; how pleasant, how creditable is the one! how humiliating the other, to every man of spirit and sensibility!

I have thus endeavoured to shew, that, by laying medicine open, and encouraging men of science and abilities, who do not belong to the profession, to study it, the interests of humanity would be promoted, the science would be advanced, its dignity more effectually supported, and success more certainly secured to every individual, in proportion to his real merit.

Before I conclude, I must observe, that such objections as are made against any person pretending to judge of medical subjects, who has not been regularly bred to the profession, were formerly urged against the reformers from Popery. Besides urging the divine authority claimed by the church, it was said, that a set of men, who devoted their whole time and studies to so deep and complicated a subject as Theology, were the only proper judges of whatever belonged to it; that calling their authority in question, was hurting the cause of Religion, and lowering the sacerdotal character. Yet experience has shewn, that since the Laity have asserted their right of inquiry into these subjects, Theology, considered as a science, has been improved; the real interests of Religion have been promoted; and the Clergy have become a more learned, a more useful, and even a more respectable body of men, than they ever were in the days of their greatest power and splendor.

I hope I have advanced no opinions in these Lectures, that tend to lessen the dignity of a profession, which has always been considered as most honourable and important. But, I apprehend, this dignity is not to be supported by a narrow, selfish, corporation-spirit; by self-importance; by a formality in dress and manners, or by an affectation of mystery. The true dignity of physic is to be maintained by the superior learning and abilities of those who profess it, by the liberal manners of gentlemen, and by that openness and candour, which disdain all artifice, which invite to a free inquiry, and thus boldly bid defiance to all that illiberal ridicule and abuse, to which medicine has been so much and so long exposed.

FINIS.

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